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BULLETIN OF THE RHODE ISLAND COLLEGE  
OF AGRICULTURE AND MECHANIC ARTS.

VOL. III. NO. I.

FOR MAY, 1907

CATALOGUE OF THE COLLEGE.



REPORT OF BOARD OF MANAGERS--PART III

KINGSTON, R. I.

1907.

PUBLISHED QUARTERLY BY THE COLLEGE

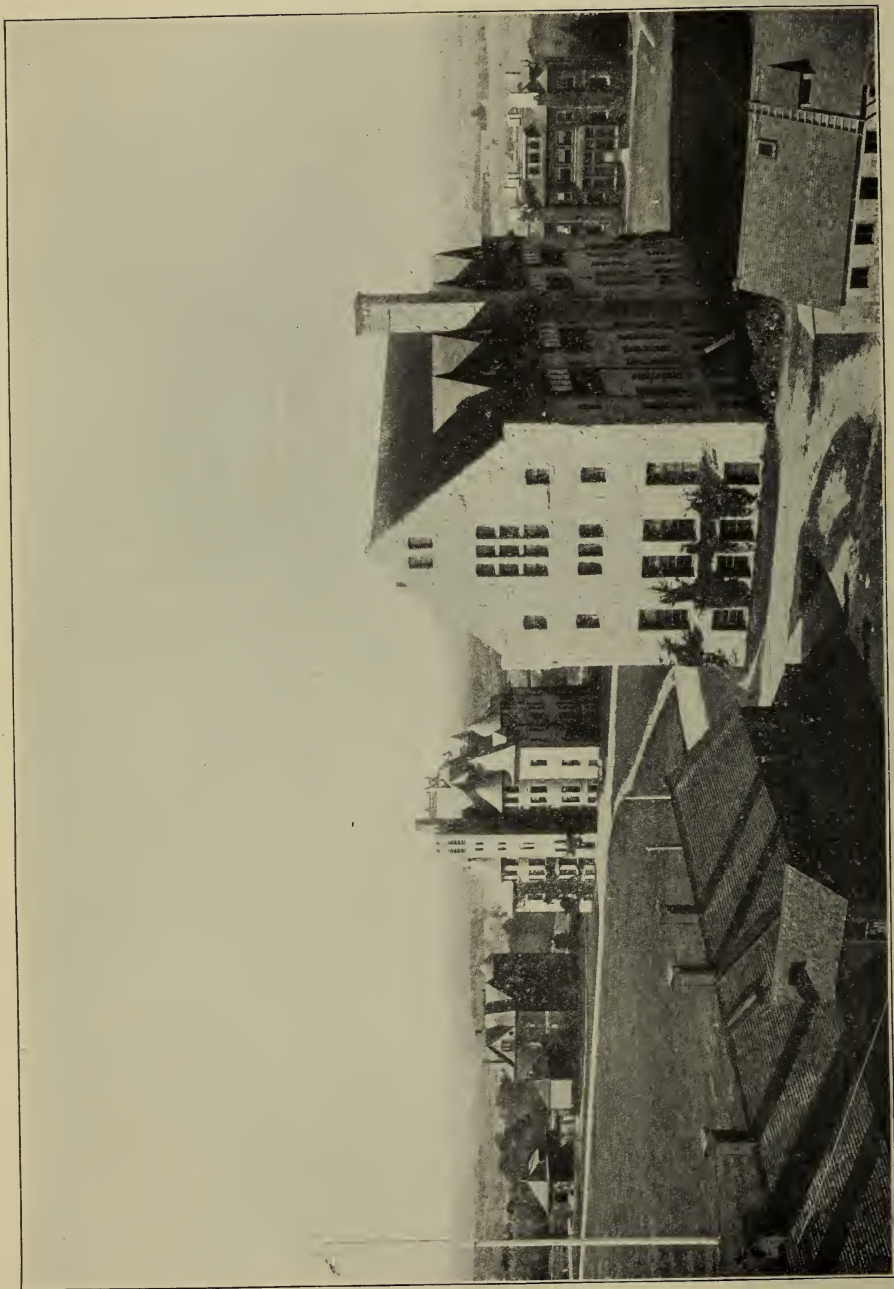
MAY, AUGUST, NOVEMBER, FEBRUARY.

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GENERAL VIEW OF MAIN BUILDINGS.



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NINETEENTH ANNUAL REPORT

OF THE

Corporation, Board of Managers

OF THE

Rhode Island College of Agriculture  
and Mechanic Arts,

MADE TO THE

General Assembly at its January Session, 1907.

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PART III—CATALOGUE.

Part I—General Report—is printed under separate cover.

Part II—Experiment Station Report—is printed under separate cover.

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Providence, R. I.  
E. L. Freeman Company, State Printers.  
1907.



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1913/14

## Rhode Island College of Agriculture and Mechanic Arts.

### Corporation.

HON. ROBERT S. BURLINGAME.....	NEWPORT COUNTY.
HON. C. H. COGGESHALL .....	BRISTOL COUNTY.
HON. CHARLES DEAN KIMBALL.....	PROVIDENCE COUNTY.
HON. THOMAS G. MATHEWSON.....	KENT COUNTY.
HON. J. V. B. WATSON.....	WASHINGTON COUNTY.

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### Officers of the Corporation.

HON. CHAS. DEAN KIMBALL, President.....	P. O., PROVIDENCE, R. I.
HON. C. H. COGGESHALL, Clerk.....	P. O., BRISTOL, R. I.
HON. C. H. COGGESHALL, Treasurer.....	P. O., BRISTOL, R. I.

## Report.

*To His Excellency James H. Higgins, Governor, and the Honorable  
General Assembly of the State of Rhode Island and Providence  
Plantations, at its January Session, 1907:*

I have the honor to submit herewith Part Three of the Nineteenth Annual Report of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, as required by law.

CHARLES DEAN KIMBALL,

*President of the Board of Managers of the Rhode Island  
College of Agriculture and Mechanic Arts.*

## Faculty and Other Officers.

---

HOWARD EDWARDS, A. M., LL. D.,

PRESIDENT.

*Professor of Political Economy and Social Science,*

A. M., Randolph-Macon College, 1876; Student, University of Leipzig, 1877-1878; Student in Paris, 1878; Teacher, Bethel Academy, Virginia, 1878-1880; Teacher, Bingham School, North Carolina, 1880-1882; Acting Principal of Bethel Academy, Virginia, 1882-1884; Principal, Tuscumbia Academy, Alabama, 1884-1885; Professor of English and Modern Languages, University of Arkansas, 1885-1890; Professor of English and Modern Languages, Michigan Agricultural College, 1890-1906; LL. D., University of Arkansas, 1891; Leave of absence in France and England, 1891-1892; Entered upon duties as President, July 1, 1906.

HOMER JAY WHEELER, PH. D.,

*Professor of Geology and Agricultural Chemistry,*

B. S., Massachusetts Agricultural College, 1883; Assistant Chemist, Massachusetts State Experiment Station, 1883-1887; Graduate student, University of Göttingen, 1887-1889; Ph. D., Göttingen, 1889; Appointed Chemist of Rhode Island Agricultural Experiment Station and Professor of Geology, 1890; Acting President, August 15, 1902-April 1, 1903.

E. JOSEPHINE WATSON, A. M.,

*Professor of Languages,*

A. B., Smith College, 1882; A. M., Cornell University, 1883; Assistant in English, Smith College, 1883-1887; Student of North European Languages in Göttingen, 1887-1889; Appointed Professor of Languages, September, 1892; Student of French in Tours, summer of 1895.

WILLIAM ELISHA DRAKE, B. S.,

*Professor of Mechanical Engineering,*

B. S., Polytechnic Institute, Worcester, 1886; Instructor in Physics and Electricity, Worcester Polytechnic Institute, 1887; Instructor in Woodworking at Pratt Institute, Brooklyn, 1887-1893; Appointed Professor of Mechanical Engineering, 1893.

HARRIET LATHROP MERROW, A. M.,

*Professor of Botany and Secretary of the Faculty,*

B. S., Wellesley College, 1886; Teacher of Science, Plymouth (Mass.) High School, 1887-1888; Teacher of Science, Harcourt Place, Gambier, O., 1888-1891; Graduate student, University of Michigan, 1891-1892; A. M., Wellesley College, 1893; Graduate assistant, Botanical Laboratory, University of Michigan, 1893-1894; Appointed Professor of Botany, January, 1895.

## FRED WALLACE CARD, M. S.,\*

*Professor of Agriculture,*

B. S., Cornell University, 1892; M. S., Cornell University, 1893; Assistant Horticulturist, Cornell University Experiment Station, 1893; Associate Professor of Horticulture, University of Nebraska, 1893-1898; Appointed Professor of Horticulture, 1898.

## COOPER CURTICE, D. V. S., M. D.,†

*Professor of Animal Husbandry,*

B. S., Cornell University, 1881; D. V. S., Columbia Veterinary College, N. Y., 1883; M. D., Columbian University, Washington, D. C., 1887; Assistant Paleozoic Paleontologist, U. S. Geological Survey, 1883-1886; Specialist, Department of Agriculture, Washington, D. C., 1886-1892; Veterinarian, State Board of Health, N. Y., 1892-1894; Tuberculosis Specialist, U. S. Department of Agriculture, Washington, D. C., 1895-1896; Professor of Zoölogy, North Carolina College of Agriculture and Mechanic Arts, 1898; State Veterinarian, North Carolina, 1899; Appointed Professor of Zoölogy, 1900; Professor of Animal Husbandry, 1902.

## VIRGIL LOUIS LEIGHTON, Ph. D.,

*Professor of Chemistry,*

A. B., Tufts College, 1894; A. M., Kansas State University, 1895; Ph. D., Tufts College, 1897; Instructor in Organic Chemistry, Tufts College, 1897-1901; Appointed Associate Professor of Chemistry, 1901; Professor, 1903.

## JOHN BARLOW, A. M.,

*Professor of Zoölogy,*

B. S., Middlebury, 1895; A. M., Brown University, 1896; Assistant Biologist, R. I. Experiment Station, 1898; Professor of Biology, Fairmount College, 1898-1901; Appointed Professor of Zoölogy, 1901.

## GILBERT TOLMAN, A. M.,

*Professor of Physics and Electrical Engineering,*

B. M. E., University of Maine, 1896; Instructor in Physics and Physical Geography, Shaw University (Raleigh, N. C.), 1896-1900; A. M., Columbia University (New York City), 1901; Assistant, Department of Physics, Columbia University, 1901-1903; Appointed Professor of Electrical Engineering, 1903.

## MARSHALL HENRY TYLER, B. S.,

*Professor of Mathematics,*

B. S., Amherst College, 1897; Instructor at St. Mark's, 1897-1898; Appointed Master of the Preparatory School, 1898; Professor of Mathematics, 1906.

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\*Resigned. Resignation to take effect July 1.

†Leave of absence August 15 to December 1, 1906. Resigned. Resignation to take effect April 1.

## FINGAL CONWAY BLACK, C. E.,\*

*Professor of Highway Engineering and Instructor in Military Science and Tactics,*

B. S., South Carolina Military Academy, 1890; Graduate student, University of Chicago, 1902; C. E., Scio College, 1904; General Engineering Practice, 1890-1897; County Engineer, Spartanburg County, S. C., 1897-1898; First Lieutenant, Third U. S. V. Engineers, 1898-1899; Consulting Engineer, Spartanburg, S. C., 1899-1901; City Engineer, Spartanburg, S. C., 1901-1902; Consulting Engineer, Chicago, Ill., 1903; Professor of Civil Engineering, Scio College, 1904-1905; Professor of Civil Engineering, Indiana College of Applied Science, 1905-1906; Appointed Professor, 1906.

## GEORGE EDWARD ADAMS, B. S.,

*Professor of Agriculture,*

B. S., R. I. College of Agriculture and Mechanic Arts, 1894; Student, Cornell University, 1897 and 1899-1900; Assistant in Horticulture, Rhode Island Experiment Station, 1895-1901; Assistant Agriculturist, Rhode Island Experiment Station, 1901-1906; Associate, Agronomy, 1906; State Statistical Agent, U. S. Department of Agriculture, 1901; Appointed Professor of Agriculture, 1907.

## JOHN WILLARD BOLTE', B. S.,

*Assistant Professor of Animal Husbandry,*

B. S., Michigan Agricultural College, 1905; Instructor in Animal Industry and Poultryman, Utah Agricultural College and Experiment Station, 1905-1906; Appointed Assistant Professor of Animal Husbandry 1906; Professor in charge of department in absence of Dr. Curtice.

## THOMAS CARROLL RODMAN,

*Instructor in Woodwork,*

Appointed, 1890.

## MABEL DEWITT ELDRED, B. S.,

*Instructor in Drawing,*

B. S., R. I. College of Agriculture and Mechanic Arts, 1895; Appointed Instructor in Drawing, 1897.

## ELIZABETH WATSON KENYON, A. M.,†

*Instructor in Languages and History,*

B. S., Mt. Holyoke College, 1896; A. M., Brown University, 1897; Instructor in English and History, Middleborough (Mass.) High School, 1898-1900; Appointed Instructor in Languages and History, 1900.

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\*Resigned. Resignation to take effect September 1.

†Leave of absence for the year 1906-1907.



## BESSIE DEAN COOPER, PH. B.,

*Instructor in Languages and History,*

Ph. B., Cornell University, 1897; Teacher of History, St. Mary's Hall, Burlington, N. J. 1898-1900; Bishopthorpe School, South Bethlehem, Pa., 1900-1902; High School, Berlin N. H., 1902-1905; Graduate student, Yale University, 1905-1906; Appointed Instructor in Languages and History, 1906.

## ANDREW EDWARD STENE, M. S.,

*Superintendent of College Extension,*

B. S., University of Minnesota, 1897; Principal of Schools, Ashby (Minn.), 1897-1901; M. S., Cornell University, 1902; Appointed Assistant in Horticulture, 1903; Appointed Superintendent of College Extension, 1904.

## HOWLAND BURDICK, B. S.,

*Instructor in Dairying and Farm Superintendent,*

B. S., R. I. College of Agriculture and Mechanic Arts, 1895; Appointed Assistant in Agriculture, 1896; Appointed Instructor in Agriculture and Farm Superintendent, 1900; Appointed Instructor in Dairying, 1906.

## WALTER SHELDON RODMAN, B. S.,

*Instructor in Physics and Electrical Engineering,*

B. S., R. I. College of Agriculture and Mechanic Arts, 1904; Appointed Instructor in Physics and Electrical Engineering, 1904.

## LILLIAN EDNA TOLMAN,

*Instructor in Stenography and Typewriting.*

Appointed, 1905.

## KATHLEEN SENTON, A. B.,

*Instructor in Languages,*

A. B., Oberlin College, 1905; Teacher of Mathematics and Science, St. John Baptist School, New York City, 1905-1906; Appointed Instructor in Languages, 1906.

## GEORGE LESLIE BIDWELL, B. S.,

*Instructor in Chemistry,*

B. S., Tufts College, 1905; Assistant in Chemistry, Tufts College, 1904-1905; Appointed Instructor in Chemistry, 1906.

## JOHN EDWARD SCHAEFER, B. S.,

*Instructor in Horticulture,*

B. S., Michigan Agricultural College, 1905; Special Agent, U. S. Department of Agriculture Washington, D. C., 1903-1904; Scientific Assistant, U. S. Department of Agriculture, 1906; Appointed Instructor in Horticulture, 1906.



## THOMAS ALFRED CHITTENDEN, B. S.,

*Instructor in Ironwork,*

B. S., Michigan Agricultural College, 1898; With McIntosh and Seymour Engine Co., Auburn, N. Y., 1898-1899; Student, New York State Normal School, Albany, 1899-1900; Instructor in Mechanical Drawing, North Carolina College of Agriculture and Mechanic Arts, 1900-1904; Instructor in Manual Training and Drawing, Indiana University, 1904-1906; Appointed Instructor in Ironwork, 1906.

## JOHN FRANKLIN KNOWLES, B. S.,

*Assistant in Woodwork,*

B. S., R. I. College of Agriculture and Mechanic Arts, 1894; Appointed Assistant in Woodwork, 1894.

## LILLIAN MABELLE GEORGE, B. S.,

*Librarian,*

B. S., R. I. College of Agriculture and Mechanic Arts, 1899; A. B. in Library Science, University of Illinois; Appointed Librarian, 1899.

## LUCY COMINS TUCKER,

*Secretary to the President.*

## JENNIE ELIZABETH FRANCIS,

*Bookkeeper.*

## SARAH B. BREED,

*Matron of the Boarding Hall.*

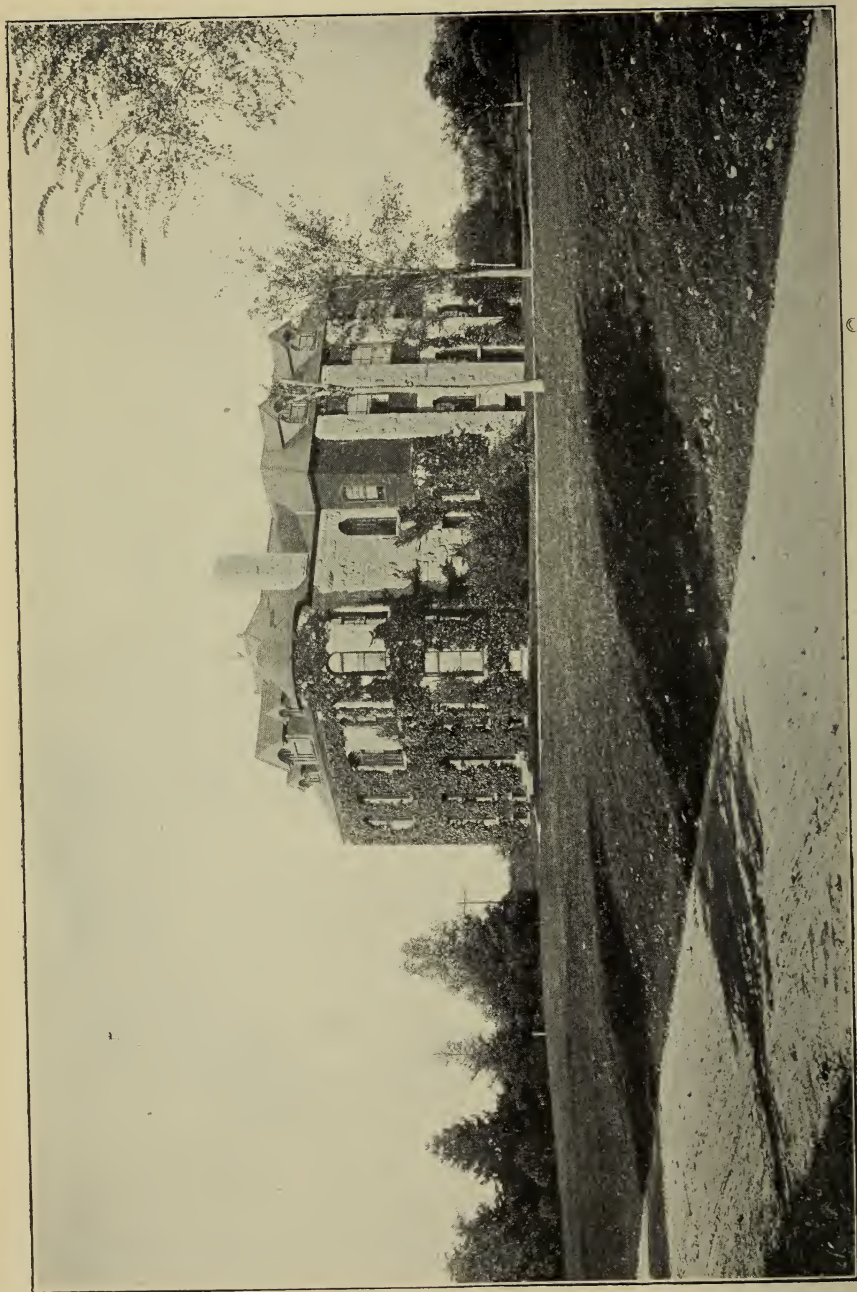
# Lecturers.

## Poultry Course, 1907.

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- I. K. Felch, Natick, Mass., STANDARD POULTRY, JUDGING, AND JUDGING PRACTICE. One week.
- A. F. Hunter, Abington, Mass., EGG PRODUCTION AND MARKET POULTRY. Four lectures.
- J. Alonzo Jocoy, Wakefield, R. I., BROILERS AND EGG PRODUCTION. Two lectures.
- D. J. Lambert, Apponaug, R. I., HOW TO ESTABLISH A BUSINESS, AMERICAN BREEDS. Five lectures.
- V. L. Leighton, Kingston, R. I., FIVE YEARS' ACCOUNTS OF THE POULTRY YARD. One lecture.
- John Maloney, Boston, Mass., DEMONSTRATIONS OF PICKING AND DRESSING POULTRY. Two days.
- W. D. Rudd, Boston, Mass., THE POULTRY MARKET. One lecture.
- E. Collins Tefft, Wakefield, R. I., NATURAL INCUBATION, ASIATIC BREEDS. Two lectures.
- Thomas Wright, South Sudbury, Mass., SQUAB RAISING. Four lectures.
- C. K. Graham, Conn. Agr. College, Storrs, Conn., MARKET FOWLS AND MARKETING. One lecture.





THE EXPERIMENT STATION.

## Experiment-Station Council.

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HOWARD EDWARDS, A. M., LL. D.....	} President of the College. } <i>Ex-officio</i> Member.
H. J. WHEELER, Ph. D.....	Director, Chemistry and Agronomy.
FRED W. CARD, M. Sc.....	Horticulture.
LEON J. COLE,* Ph. D.....	Animal Breeding and Pathology.
BURT L. HARTWELL, Ph. D.....	Associate, Chemistry.
GEORGE E. ADAMS, B. Sc.....	Associate, Agronomy.
W. F. KIRKPATRICK, B. Agr., B. E.....	Asst., An'l Breeding and Pathology.
J. WILLARD BOLTE, B. Sc.....	Assistant, Animal Feeding.
P. H. WESSELS, B. Sc.....	Assistant, Chemistry.
S. C. DAMON, B. Sc.....	Assistant, Agronomy.
F. R. PEMBER, B. Sc.....	Assistant, Plant Physiology.

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## Other Members of the Station Staff.

J. FRANK MORGAN, A. M.....	Assistant, Chemistry.
H. S. HAMMOND, B. S. A.....	Assistant, Chemistry.
L. F. WHIPPLE.....	Assistant, Chemistry.
NATHANIEL HELME.....	Meteorology.
BEULAH A. HOITT.....	Stenographer and Accountant.
E. ELIZABETH MEEARS.....	Stenographer and Librarian.

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*The publications of the station will be mailed free, upon request, to all residents of Rhode Island to whom they are of interest. Suggestions as to how the station can aid the state are gladly received. Visitors are always welcome. Railway station, telegraph, express, and post-office—Kingston, Rhode Island. Long distance telephone, Narragansett Pier Exchange.*

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\*Also expert in the Bureau of Animal Industry, U. S. Department of Agriculture. Engaged in coöperative work between the Bureau and the station.

†Agent, Bureau of Animal Industry, U. S. Department of Agriculture. Engaged in coöperative work between the Bureau and station.

1908.

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# College Calendar.

1907-8.

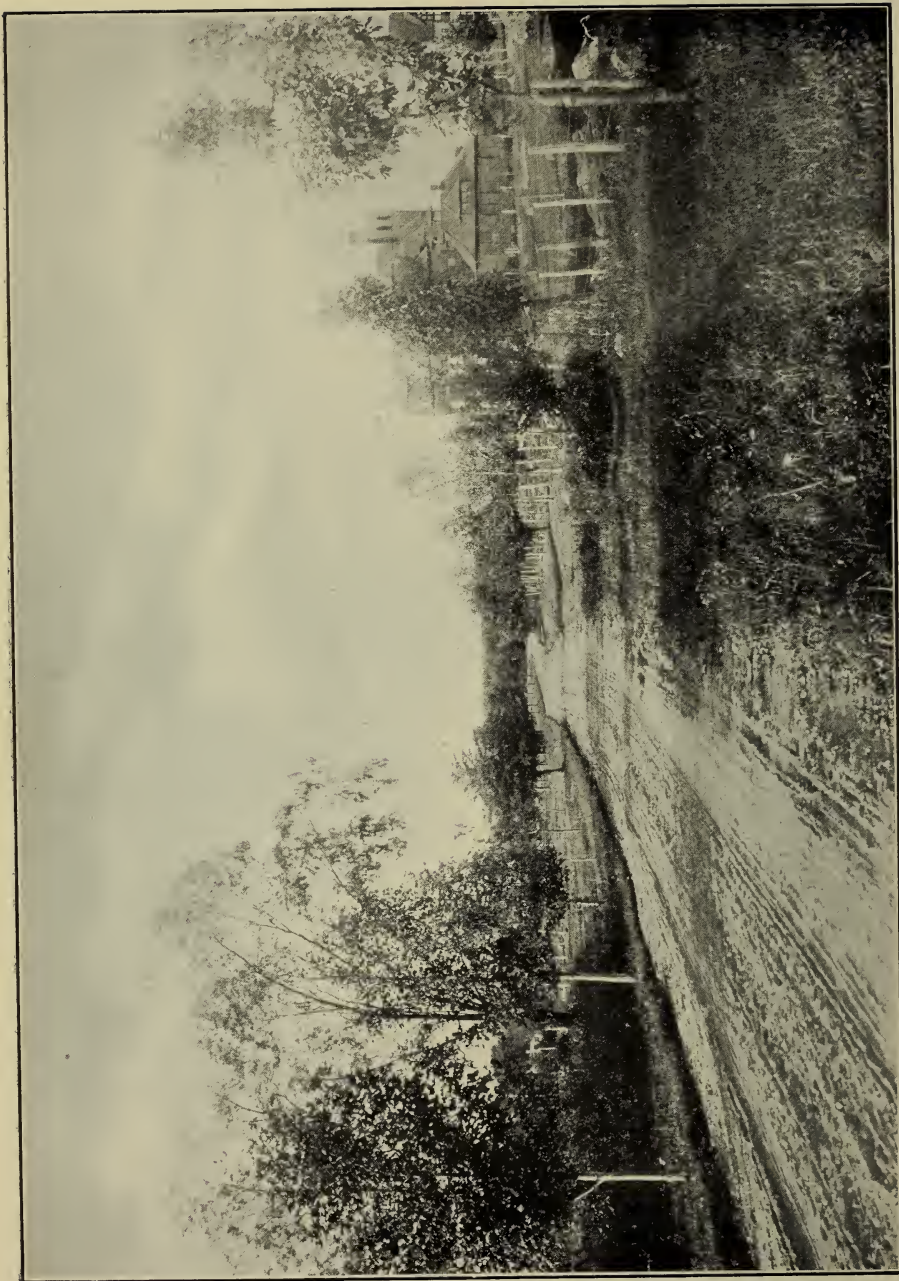
Tuesday, September 10, 1907.....	Chapel Exercises, 8:30 A. M.
Registration, examination of entering and conditioned students, 9 A. M.	
Wednesday, September 11.....	Recitations begin 9 A. M.
Tuesday, November 5.....	Election Day.
Wednesday, November 27, 12 M.,    }	Thanksgiving Recess.
Tuesday, December 3, 8:30 A. M.,   }	
December 20, 5 P. M.,                }	Christmas Recess.
January 2, 1908, 8:30 A. M.,        }	
Friday, January 31.....	First Term closes.
Monday, February 3.....	Examinations.
Tuesday, February 4.....	Second Term begins, 8:30 A. M.
Registration, 9 A. M.   Recitations begin at 1:30 P. M.	
Sunday, February 9.....	Day of Prayer for Colleges.
Friday, March 25, 5 P. M.,        }	Spring Recess.
Tuesday, April 7, 8:30 A. M.,       }	
Friday, May 8.....	Arbor Day.
Sunday, June 14.....	Baccalaureate Sermon.
Tuesday, June 16.....	Commencement Exercises.











AN APPROACH TO THE COLLEGE.

# The College.

## History.

In 1863 the state of Rhode Island accepted from the United States Government the land grant scrip, which gave to each state thirty thousand acres of the public lands for each senator and representative in Congress. The land was to be sold by the states or their agents, the proceeds arising from the sale invested, and the annual income derived therefrom was to be "inviolably appropriated by each state which may take and claim the benefit of this act, to the endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to Agriculture and Mechanic Arts, in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

On March 2, 1887, the act known as the Hatch Act was passed, appropriating \$15,000 annually to each state, for the purpose of establishing an Agricultural Experiment Station in connection with an Agricultural College or School. Such an Agricultural School was provided for by Chapter 706 of the Public Laws, passed May 23, 1888.

The United States Congress, on August 30, 1890, passed an act known as the New Morrill Bill. This appropriated for the further support of the agricultural and mechanical colleges a sum beginning with \$15,000 and continuing, with a yearly increase of \$1,000, until the annual appropriation should reach \$25,000.

That the school already established might receive the benefit of the act of Congress, the General Assembly amended Chapter 706 of the Public Laws, incorporating the Rhode Island College of Agriculture and Mechanic Arts.

Since September, 1892, the institution has been conducted on a college basis, with an entirely new course of study.

## Object and Organization.

The function of the Rhode Island College of Agriculture and Mechanic Arts is to foster the industrial life of the state, at least in so far as pertains to agriculture, manufactures, transportation, and home-making. This it does in three ways: 1. By the investigation and discovery of new truth, more or less directly applicable in the industries. 2. By the direct distribution of industrial information to the people. 3. By the organization and administration of definite courses of instruction designed to fit young men and young women for effective work in the industrial pursuits.

The first of these duties is performed by the

### Experiment Station

for a description of the work of which, the reader is referred to the report of the director, constituting Part II of the Report of the Board of Managers for the current year. A statement of its staff organization may be found on page 11 of this catalogue.

The experiment station takes part, also, in the second phase of the college activities, by distributing its bulletins to all that desire and apply for them. In order, however, more fully and directly to bring the college and its work into touch with the people, a

### College Extension Department

has been organized, and is in active operation.

The purpose of this department is to carry the instruction of the college to those who can not come to it for study. Whenever necessary and possible, visits will be made to any part of the state to examine farms, orchards, and gardens; to identify injurious insects or plant diseases, or give instruction in regard to methods of treatment; or to examine soils with a view to suggesting remedies for lack of fertility. General plans for laying out farms and for carrying out the details of any farm operations will be given the fullest consideration. The college is open for consultation at any time in regard to any problem of the farm, garden, or orchard. The fullest correspondence is invited, and conscientious consideration will be given to every letter received.

Whenever possible, arrangements will be made for lectures or demonstrations by members of the college faculty or experiment-



station staff when called for at any agricultural meeting or neighborhood gathering. Coöperative experiments will be arranged to help the farmer solve the problems which are peculiar to his own farm or his portion of the state, and for the purpose of teaching some of the principles which have been worked out at the experiment stations of this and other states. As part of the work for the present season, such experiments will be outlined along the following lines: 1. Remedies for the San José scale and other injurious insects and plant diseases. 2. Treatment of greenhouse insects with hydrocyanic acid gas. 3. Liming and the use of fertilizers which the Rhode Island experiment station has discovered to be efficient.

From time to time, as funds will permit, special lecturers will be engaged to address granges, horticultural societies and other organizations interested in agriculture, on various timely topics. Such lectures will generally be given free of charge. Members of the faculty have prepared lectures on various subjects, which they are ready to deliver at any place in the state. These lectures are free, the only charge being the traveling expenses of the speaker.

An important part of this extension work is to be the encouragement of home study and the conducting of correspondence courses. For the present, time and funds will not permit the carrying out of this plan, but advice will be given to any person wishing to take up home study, regarding courses of reading, books and other literature which may be necessary in connection with such work.

Another important phase of nature study, which aims to interest the young people of the schools in things of nature and of the farm, is

### The Nature Guard.

The Nature Guard is an organization of young people formed for the purpose of awakening in its members a livelier interest in the things of outdoor life. Its object is to stimulate the power of observation and to lay the foundation for a simple, rational education, which shall give the individual a love for nature and a sympathy with his environment, and furnish him with the means of making life more useful and more enjoyable, whether lived in the country or in the city.

The boys and girls in one school, or in one room, if the school is graded, form themselves into a band and elect officers, which are a

spy and a guardian. This band fixes its own time for meeting and adopts its own methods of procedure. Enrollment cards to be signed and returned are furnished from the college. A printed leaflet is issued monthly during the school year, and a copy is sent to each member of the Nature Guard and also, on request, to individuals who are interested. The purpose of the leaflet is to furnish a stimulus to nature-study by making each month some suggestions bearing on the subject. Monthly reports, giving observations of their own, are asked from the members. Supplemental leaflets for teachers will be issued from time to time, the object of which will be to call attention to the latest views and methods in nature-study.

During the past year a new charter has been designed and all old bands, and bands which will be organized in the future, will receive a copy upon completing enrollment. Each member who sends in an enrollment card will receive an appropriate lapel button indicating that he belongs to the Nature Guard. At the end of the year, a neat certificate will be forwarded to all who have sent in reports during the year.

In connection with nature-study work, advice and assistance will be given to schools, to children's organizations, and to individual boys and girls who wish to carry on work with children's gardens. Where a number of gardens are placed together, as in schools or in boys' clubs, the college will send an instructor to teach methods of preparing the ground, planting, cultivating, and harvesting garden crops. Individuals will be given advice by circulars and by correspondence. Application has been made to the Washington County Agricultural Society to grant premiums to children for seed and plant collections and for exhibits of a few vegetables which can be easily grown, either in school or home gardens.

Further notes in regard to this work are given in leaflets and circulars issued by the Extension Department, and correspondence is solicited from any one who may be interested.

### The College as an Educational Agency.

In its third form of activity, the purpose and work of the Rhode Island College of Agriculture and Mechanic Arts is to give college training and culture to young men and young women, not in spite of, but through and with vocational studies. Its courses are intended, first of all, to make the student a self-supporting unit in society, a

positive force for social advancement, able and willing not only to maintain himself, but also to carry something of the common social burdens that always weigh upon the thoroughly efficient worker.

The college confers two degrees. The degree of Bachelor of Science is conferred upon a student who has completed one of the four-year courses described below. The degree of Master of Science is conferred upon those holding a Bachelor's degree from this institution, in regular order, or from other institutions having equal requirements, upon the completion of one year of resident study, the presentation of a satisfactory thesis in applied or economic science, and upon passing examinations in the subjects pursued. Persons wishing to apply for the Master's degree should write to the Committee on Graduate Study for further details.

## I. The Four-Year Courses.

To this end certain college courses, intended to fit men and women for efficiency and leadership in well-defined life-activities, have been prepared. These courses are all founded upon training in mathematics, pure and applied; the English language as a means of intercommunication; and the sciences that deal with matter, force, and life as applied more directly to agriculture, the mechanic arts, and domestic economy. In the pursuit of these vocational studies, the effort is to accumulate an array of knowledge that, in the activities of industrial life, must be always practically serviceable, and, at the same time, to gain a disciplinary training both of brain and of muscle and nerve that makes for practical effectiveness. These courses, moreover, recognizing that a college course should include not only intellectual training and the knowledge and skill requisite for bread-winning, but also preparation for citizenship, for moral and social life, have intertwined with the vocational work and study previously mentioned, the subjects that most directly make for culture and morality—history, economics, literature, languages, ethics, psychology, and sociology. These are ranked as of equal importance with the bread-winning studies; and frequently these courses exercise their strongest impress, their most lasting influence, on the moral, emotional, cultural side of the student's nature.

The college courses just discussed are four years in length, and base themselves directly on the work of the four years of the high schools. They thus become an integral part of the school system of the state.

Young men and young women, citizens of the state and having full high-school training, are admitted to these courses without charge for tuition.

The four-year courses thus offered are the agricultural course, the engineering course, the teachers' course in applied science, and the course in home economics.

### THE AGRICULTURAL COURSE.

The agricultural course is intended to give thorough preparation for taking charge of and operating a piece of landed property. Its work is centered around instruction and practice in horticulture, general farming, and animal husbandry (more especially as applied to dairying and the poultry industry). The course consists of practical work combined with thorough study of the sciences bearing directly on such work, viz.: botany, chemistry, geology, zoölogy, anatomy, physics, and entomology. In addition, it embraces the culture and mental discipline arising from the study of mathematics, English composition and rhetoric, history, drawing, modern languages, economics, and English literature. The course is planned to give the student a full and rounded development as worker, as citizen, and as man.

All agricultural students will follow the same work in the first two years; but, at the beginning of the Junior year, with the required work for all students in the course, four optional lines of work are offered, one of which must be selected by the student and followed until graduation. The four lines offered are general farming, horticulture, general animal husbandry, and poultry work. In addition, two science subjects must be elected. No option and no subject will be given for which a number of students sufficient to warrant giving it has not applied. For tabulated course, see pages 34-36.

### THE ENGINEERING COURSE.

The engineering course has the same requirements for entrance, the same duration, and the same general plan as the agricultural course. Students will follow the course as laid down until the beginning of the Junior year, at which time, as with the agricultural course, students must elect one of the four optional lines offered, viz., me-



chanical, electrical, highway, and chemical engineering. Any line of work for which the number of applicants is insufficient to warrant giving it, the college reserves the right to withdraw.

The course is arranged to prepare young men for skilled and efficient work in the great manufacturing and commercial industries of the state; in the development of electricity as a motive force and in its thousand-fold other applications to the arts and to the life of society; in the activities of the new road-building era upon which we are entering; and in the applications of chemistry as now found in the great industrial establishments. At the same time, in this as in all other courses, it is not forgotten that the man is not a mere lever in his own machinery, and the effort after breadth and completeness of life is steadily maintained. We appeal to the industrial interests of the state to coöperate with us in making this course of great material benefit. For tabulated course, see pages 34-36.

#### TEACHERS' COURSE IN APPLIED SCIENCE.

This course is intended to prepare persons to teach in industrial schools those branches of applied science that pertain especially to agriculture and the mechanic arts. In such schools it has been found of especial importance that the teachers be trained in an environment of current thought sympathetic with the industrial applications of science and intelligently appreciative of the methods and problems of such work. In response, therefore, to the need, and in accordance with an expressed purpose of the new fund from the United States Government, we have constructed this course. The effort has been to make the course effective for its purpose, while at the same time retaining for it that breadth and that cultural influence that are necessary to fit the whole man for social life and are especially important in persons who, as teachers, will exercise large personal influence over immature youth.

The general plan of the course is the same as that of the other two courses just described. It opens to the student, at the beginning of the Junior year, three options, one of which he must select in conjunction with certain studies required of all. For tabulated course, see pages 34-36.

## THE COURSE IN HOME ECONOMICS.

Of this course only the Freshman year is given in the synopsis of courses, page 34. The other years will be presented in a later pamphlet. The object of the course will be to give to the young woman such general and special training as will prepare her for the duties and work of the head of a home. It will include careful instruction in the planning, sanitation, and æsthetic surroundings of the home; the preparation of food with reference to palatableness, digestibility, and the maintenance of health; food for invalids, and other problems of dietetics; hygienic science and æsthetic principles as applied to clothing; the care of infants and young children; moral and educational problems in the bringing up of children; the shaping of the intellectual and moral atmosphere of the home. Attention will also be given to the financial management of the home, to accounts, to problems of marketing, of help, of caretaking, etc. Nowhere are science and wisdom more beneficially effective or more imperatively needed among us than in dealing with the affairs of the home in the complex social life of to-day. The success or failure of the young man, whatever his calling, is determined fully as much by the skill and good management exercised in his home as it is by his own energy, knowledge, and skill, and the results of the first ten years of combined effort in both spheres of work exert a controlling influence over the remainder of life. It costs too enormously to learn imperfectly, through years of failure and consequent bitterness, principles and methods of home administration of equal importance with those of provision for the home.

This course is designed, also, to fit young women to assume the domestic administration of large establishments, such as hospitals, boarding schools, and the like. For tabulated statement of Freshman year, see page 34.

## II. Sub-Freshman Classes.

For a number of years it has been found necessary to maintain at the college a preparatory school. Young people in whole or in part unprepared to enter our Freshman class, who do not have at their homes the advantages of high-school training, or who, without high-school advantages, have arrived at a certain maturity that renders it

inadvisable for them to undertake the work at the home school, still continue to apply for admission. We are anxious to discontinue preparatory work, both in order that we may devote all our resources to our own legitimate field, and also that we may not seem to be in competition with the excellent high schools now scattered all over the state. Yet among these applicants, the exceptional cases just mentioned and others similar in nature seem to require that we still provide for them. We have, therefore, arranged the two Sub-Freshman years outlined on page 37. We wish it, however, clearly understood that we do not encourage students to come here for purely preparatory work; on the contrary, we strongly urge all young people to get their college preparation at a regular high school.

### III. Short Courses in Agriculture and in Engineering.

There is a large class of young men and women who, unlike the more fortunate young people that are able, after completing the high school, to go through a full four years' college course, find themselves compelled, sometimes with a high-school course as preparation, much more frequently, however, without such training, to plan for entrance into industrial life by the shortest and quickest preparation that will give them the elementary knowledge and skill requisite. For such persons we have arranged a short course in agriculture and a short course in engineering. These courses are each two years in length; they require for entrance only that degree of training represented by a common-school education; they are in no sense preparatory to the corresponding college courses, and they do not, either directly or indirectly, lead to an academic degree. A certificate, however, will be awarded on completion of either course.

They are intended to be intensely and dogmatically practical, giving facts and processes without attempting to explain and correlate these by referring them to their basis in scientific theory or investigation. Moreover, each part of the course, and each subject, is in a way independent; so that the student who remains for any part of the course, say one year or even less, will be able to realize a definite acquisition, a certain distinct fitness, that he did not before possess. It is hoped that, after a little, the certificate may come to have, among farm owners and among the employers of labor in the factories and shops of the state, a certain well-defined value as com-

mentatory of the persons holding it. For tabulated statement of courses, see page 37.

#### IV. Special Poultry Course.

For many years this college has offered a winter course in the poultry industry. In fact, the first poultry course to be offered in the United States was offered here ten years ago. The college will continue to offer the twelve weeks' course during the winter term. It is also proposed to offer the same course during the fall term, provided there is sufficient demand for it. The object of these courses is to give the most direct and practical instruction to those who contemplate taking up the business, or to those already engaged in it, to enable them to proceed with greater certainty in their work and make the most of whatever they invest. All instruction bears immediately on the science and art of caring for fowls by the latest and best methods in practice. Practical poultrymen, prospective judges, and college graduates who desire to equip themselves as instructors and experimenters will find in these courses much that they need. Special circulars will be sent on request.

#### V. Selected Courses.

Whenever possible, students are urged to enter one of the courses leading to a degree. The arrangement of these courses is the result of careful thought and long experience as to the best combination of studies to fit one for the various occupations in which a technical education is required; and it is believed that no such thorough preparation can be obtained from special courses selected by the student.

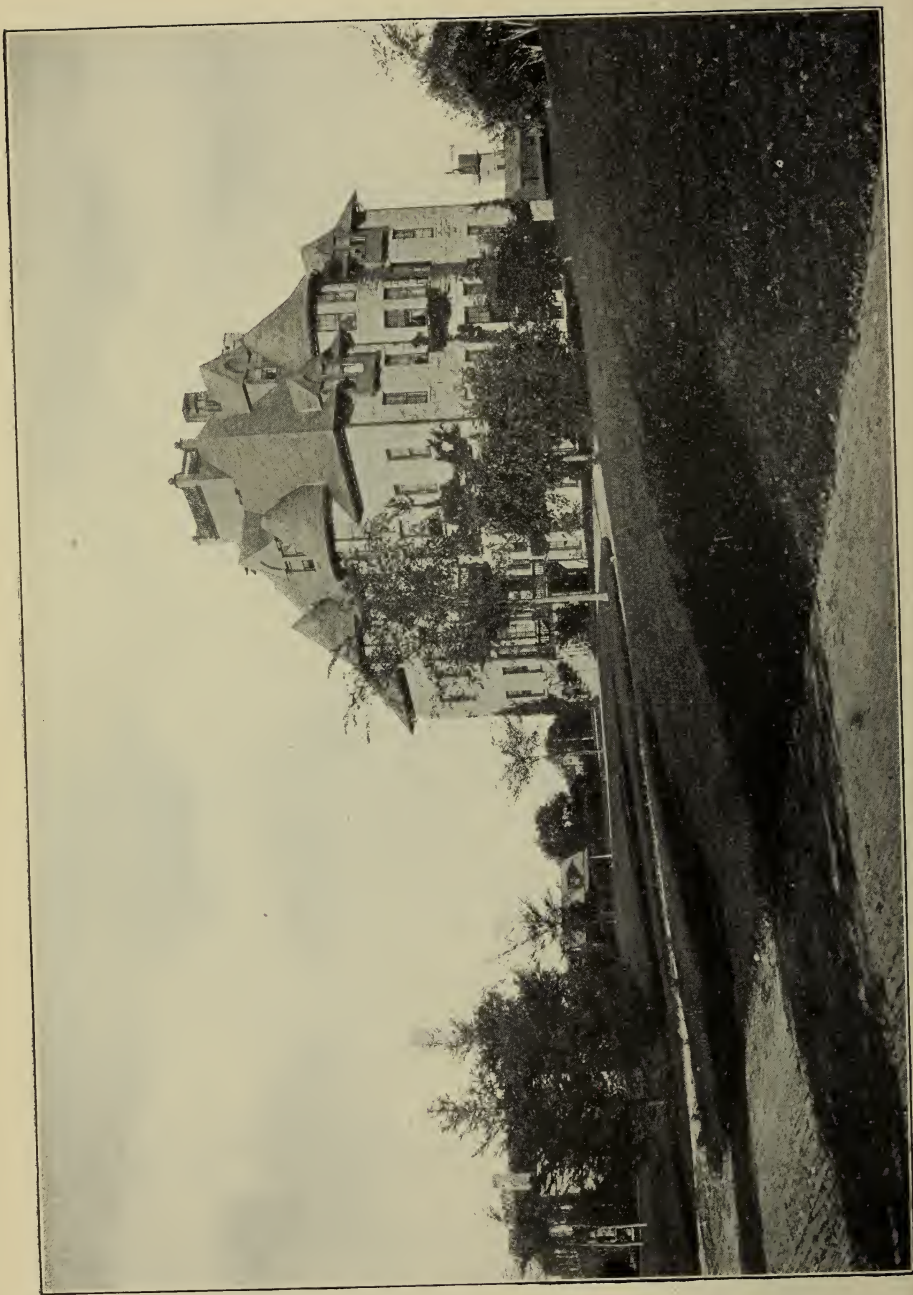
However, any subjects described in this catalogue may be taken by special students of maturity, who can satisfy the professor in charge of the subject chosen that they are prepared to derive benefit from such work.

#### Requirements for Admission to the College, 1907.

Graduates from high schools, and other schools of similar grade, are admitted without examination, on certificates which are filled out by their principals. The candidate must apply to the college







for the certificate, giving the address of his principal who is to certify him. The college will correspond with the principal, furnishing blanks for him to fill. Graduates from high schools are not admitted on diploma. Satisfactory evidence as to good moral character must be presented to the committee on entrance examinations.

Candidates for admission who are not graduates of high schools must in all cases supply a statement of such school records as they may have made, and also a certificate or testimonial of good moral character. The latter may be from some recent teacher, from a pastor, or from other responsible persons.

Candidates not entering the Freshman class on certificate will be examined in arithmetic; algebra; plane geometry; English grammar; advanced English; one year of German, French, or Latin; one year of science and one year of history or their equivalents.

In the arithmetic examination, especial attention will be paid to fractions, the metric system, simple and compound proportion, and square root; thorough drill in mental arithmetic will be necessary. The applicant should have mastered all of Wentworth's School Algebra as far as page 293, and Wells's Plane Geometry, or their equivalents.

The English requirements are those prescribed for entrance to the New England colleges. The student will be expected to show familiarity with the works named below. These are divided into two classes. Those marked (*a*) are to be read, and the candidate will be required to show a general knowledge of their subject-matter and of the lives of the authors. Those marked (*b*) are to be thoroughly studied, so that the candidate will be able to pass an examination upon their subject-matter and structure. To be acceptable, the candidate's paper must show a good knowledge of spelling, capitalization, punctuation, sentence and paragraph structure. The books prescribed for 1907-1908 are the following: (*a*) The Sir Roger de Coverley Papers; Coleridge's The Ancient Mariner; Eliot's Silas Marner; Irving's Life of Goldsmith; Lowell's The Vision of Sir Launfal; Scott's Ivanhoe and The Lady of the Lake; Shakespeare's Macbeth, and The Merchant of Venice; Tennyson's Idylls of the King. (*b*) Burke's Speech on Conciliation with America; Macaulay's Essay on Milton, and Life of Johnson; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Shakespeare's Julius Cæsar.

The language requirements cover one year's work in either French, German, or Latin; and Latin is recommended. In French and German this requirement comprises the essentials of grammar, easy reading, and elementary composition. In Latin the candidate must be prepared to study Cæsar. The following text-books are recommended: Chardenal's Complete French Course or Longman's French Grammar (Complete Edition), Super's French Reader or Aldrich and Foster's; the Joynes-Meissner German Grammar, Part I, Collar's Shorter Eysenbach or Lange's German Method for Beginners, Guerber's Märchen und Erzählungen, Part I, or about one hundred and fifty pages of easy reading; Collar and Daniell's First Latin Book, or Lindsay and Rollins's Easy Latin Lessons.

Candidates may enter any of the higher classes for which they are prepared.

### Teachers' Certificate.

The following resolution recently adopted by the Board of Education of this state is self-explanatory: "The certification of the president (of this college) that an applicant for a teacher's certificate has pursued a secondary school course of four years, subject to the approval of the committee on qualifications, and in addition thereto has pursued a four years' collegiate course in the Rhode Island College will be received as evidence of the required qualifications in scholastic subjects for a teacher's certificate of the first grade."

### Opportunities Offered to Women.

The course in home economics is especially designed for women, although all other courses are open to them. The women's dormitory will accommodate a limited number of students, and the college will, on application, find boarding-places for others in private families in town. Special waiting and study rooms are provided for the women who are day students.

### Expenses for Women.

Room-rent is \$12.00 a term, and includes heating and lights. Rooms are provided with necessary furniture, including mattresses, but no other bedding material. Other expenses are as given below. The women have an opportunity to do their own washing and ironing. A Singer and a Household sewing-machine are at the disposal of all those living at the dormitory.



### \* Expenses.

Tuition is free to residents of Rhode Island. To non-residents, tuition is \$15.00 a term, or \$30.00 a year.

The regular college expenses are tabulated below: board, room-rent, and fees being payable in advance for each half-term, or on September 10 and November 12, 1907, and February 4 and April 8, 1908. Students should add a sum varying from \$10.00 to \$25.00 per year for miscellaneous expenses connected with college life.

	Minimum.	Maximum.
Board, \$3.50 per week for 36 weeks.....	\$126 00	\$126 00
†Room-rent in men's dormitory, including heat and light, \$15.00 per term.....	30 00	30 00
Incidental expenses for all students, \$4.50 per term.....	9 00	9 00
Laboratory fees, \$3.00 to \$15.00 per term.....	6 00	30 00
Books.....	15 00	30 00
Laundry, 30 cts. to 60 cts. per week.....	10 80	21 60
Uniform for military drill, \$15.50.....	7 50	30 00
	<hr/> \$204 30	<hr/> \$276 60

**FEES.**—All fees are payable in advance for each half-term. The amount of laboratory fees varies from 75 cents to \$10.00 per term, depending upon the laboratory work taken. In botany the fee is 75 cents per term for non-collegiate students; \$1.50, for college students. For each of the following, \$1.50 per term is charged: zoölogical laboratory; carpenter shop; woodturning, forge shop, machine shop, and woodcarving. Fees for physics are as follows: for non-collegiate students, \$1.50 per term; for Freshmen, \$2.25; for Sophomores, \$3.00. This pays for the material ordinarily used in class work and for the wear and care of tools and apparatus. Any person who breaks apparatus or tools, through carelessness or neglect of instructions, will be charged the cost of the same. The chemical laboratory fee is \$4.00 per term for qualitative, quantitative, and organic laboratory work. This covers general chemicals and use of apparatus. Students are required to pay for breakage and for any chemicals they may use in making special preparations for themselves. A fee of \$4.50 is also required in the electrical laboratory. A fee of 50 cents will be charged for each examination to make up a condition. Graduates pay the cost of diplomas, \$5.00. *No diploma will be issued until the candidate has paid all term bills.*

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\*For exceptions in expenses for women, see above.

†There will be no refund for room-rent except by special arrangement with the president of the college.

UNIFORM.—Every able-bodied male student is required to drill and to wear a uniform. The uniform must be paid for immediately on entering the college, when the students are measured for the suits. When worn only on drill and properly cared for, one uniform may last two or more years. The student may, however, wear his uniform all the time.

TRANSPORTATION.—The college conveys students daily to and from the railroad station free of charge. Once at the beginning and end of each term, a team conveys trunks to and from the station.

BOARDING STUDENTS.—Boarding students shall deposit \$30.00 each half-term. The price of board for 1907-8 will be \$3.50 per week. Students who *leave regularly every week* on Friday afternoon and return Monday morning will pay \$2.50 per week. No other reduction on board is made for less than five whole days' absence at one time. No person will be admitted to the dining-room until he has secured from the bursar a meal ticket, on the back of which will be found the rules governing the holder of such ticket. After this ticket is issued, all charges for board will be made in accordance therewith unless the student has the ticket changed by the bursar. Arrangement of charges for meals sent to students' rooms for any cause must be made in advance with the matron of the boarding hall.

FURNITURE.—*All students in the men's dormitory are required to supply their own furniture and bedding.* The necessary furniture may be obtained at the college when desired. A room may be furnished for from \$8.00 to \$10.00. Iron bedsteads three feet wide are included under room-rent. The furniture, if properly kept, may be sold, when the student leaves, for one-half to three-fourths the original price.

ROOMS IN THE VILLAGE.—At present the dormitory facilities for young men are taxed beyond their capacity. Students especially desirous of rooming in the dormitory are advised to make their applications at once. It is probable that most of the dormitory rooms will be occupied by the older students. Arrangements have been made for rooms, however, in the village of Kingston, some of these being under college management and others in private houses. In the case of the former, room-rent will vary from 60 cents to \$1.00 per week, with stoves and bedsteads furnished, the student to provide other furnishings and fuel himself. Furnished rooms in private houses for students who occupy them throughout the college year range from \$1.25 to \$2.00 per week.







COLLEGE STORE.—Students will be required to pay cash at the store for all books and other supplies.

DAMAGE FUND.—All damage not due to ordinary wear shall be assessed to students as follows:

1. Students at once acknowledging damage and agreeing to pay for same will be assessed actual cost of repair, including labor.
2. Students found guilty of such damage but not acknowledging and settling for the damage will be charged double the cost of repair.
3. Students will be responsible for damage in their own rooms.
4. Damage that is not settled as above may be assessed to all the students or to a group of students, pro rata. Each case and the amount of assessment will be considered on its merits.

## Self-Help.

There is a certain amount of labor about the college buildings, on the farm, at the experiment station, and in the offices and laboratories, for which students will be employed whenever it is feasible to do so. Industrious students frequently earn an amount which aids considerably in paying their expenses, a sum varying from \$25.00 to \$125.00 per year.

In view of the fact, however, that the amount of this work is strictly limited and that it is not the policy of the college to create such work, and, furthermore, because of the increasing number of students and the more frequent applications for student labor, it seems desirable to state the conditions under which this work will hereafter be assigned.

Preference will be given to such students as are in most need of this labor for support while in college. New students desiring labor should bring a statement from parent or guardian, form for which will be furnished, showing to what extent the student must depend upon himself for support. Preference will generally be given to students who have been in attendance for at least a year, and to students who room and board at the college.

Any student accepting labor must maintain a fair record both in deportment and in the classroom. No student will be kept at work who does not give reasonable satisfaction. Any student abusing privileges incidental to his duties as student laborer will be considered inefficient and his work withdrawn. Payment for this service will

vary from ten to fifteen cents per hour, according to the grade and difficulty of the work and the experience of the student. In general, students should not expect more than ten cents an hour for the first year. It is a rule of the college that any student desiring to perform more than twenty hours of student labor per week must secure permission from the faculty council. In the future, it may be necessary to limit the amount which any one student may receive for student labor.

Some young people have the impression that the college offers such opportunities for self-help that it is safe to enter with practically no funds, relying solely on money earned while here. In exceptional cases this may be done, but prospective students are strongly advised not to enter until they have at least \$100.00 at their disposal. A student who has to make his own way must also plan to work steadily during both the short and long vacations. Occasional vacation work at the college can be furnished to students, but as a rule they should look elsewhere for this class of work.

### Religious Influences.

This college is a state institution, and, consequently, the widest latitude is given to all creeds and forms of religious belief. Simple chapel exercises are held every school-day morning, and are conducted by the president or some other member of the faculty. All students are expected to attend chapel.

A branch of the Intercollegiate Young Men's Christian Association is doing active work among the men students, holding a meeting every Sunday afternoon throughout the year. This association conducts courses in bible study and is taking the lead in endeavoring to establish sound and high ideas of college life.

The Young Women's Christian Union is doing a similar work for the young women.

The village church cordially invites all students to attend its services and, if possible, to join its membership. Every effort is made by the college to minister to the higher life of the students and to bring before them the noblest ideals, without in any way attempting to coerce them to particular beliefs.



THE VILLAGE CHURCH.





## Thursday Lectures.

From time to time speakers from abroad, both clergymen and laymen, are invited to address the students upon various subjects. Members of the faculty have also been among the lecturers. Following is the list of speakers for the year:

- |       |     |   |
|-------|-----|---|
| Sept. | 13. | Pres. Howard Edwards, PURPOSE.  |
|       | 20. | Dr. H. J. Wheeler, EXPERIMENT-STATION WORK.   |
|       | 27. | Prof. Fred W. Card, OPPORTUNITIES IN AGRICULTURE.   |
| Oct.  | 4.  | Prof. W. E. Drake, THE BEGINNINGS OF ARCHITECTURE.  |
|       | 11. | Prof. Gilbert Tolman, WEATHER FORECASTING.  |
|       | 18. | Rev. C. H. Wheeler, SALEM WITCHCRAFT.   |
|       | 25. | Prof. C. D. Smith, Michigan, PURPOSE OF AN AGRICULTURAL COLLEGE.  |
| Nov.  | 1.  | Rev. Charles P. Redfield, IDEALS.   |
|       | 8.  | Miss E. J. Watson, SOME SUMMER GLIMPSES OF ITALY.   |
|       | 15. | Rev. Frederick E. Seymour, Wakefield, DUTY.   |
|       | 22. | Rev. Frank J. Goodwin, Pawtucket, ABRAHAM LINCOLN.  |
| Dec.  | 6.  | Rev. George W. Kent, Providence, DUTIES OF CITIZENSHIP.   |
|       | 15. | Rev. A. B. Cristy, Providence, WHAT CAN THE STATE DO TO CHRISTIANIZE SOCIETY?   |
| Jan.  | 10. | Miss H. L. Merrow, ON CAPE COD, IN THE FOOTSTEPS OF THOREAU.  |
|       | 17. | Pres. W. H. P. Faunce, Brown University, ROBERT LOUIS STEVENSON.  |
|       | 24. | Rev. Harry W. Lambert, East Providence, HINTS FROM HAMLET.  |
|       | 31. | Hon. W. E. Ranger, Providence, SOCIAL IDEALS.   |
| Feb.  | 7.  |   |
|       | 14. | Gen. E. H. Rhodes, Providence, THE SIEGE OF PETERSBURG AND THE SURRENDER AT APPOMATTOX.                               |
|       | 21. | Prof. J. Irving Manatt, Brown University, GLIMPSES OF GREEK HUSBANDRY.  |
|       | 28. | Hon. W. B. Weeden, Providence, FORMATION AND DEVELOPMENT OF THE UNITED STATES CONSTITUTION.                           |
| March | 7.  | Hon. George H. Utter, Westerly, PUBLIC OPINION.   |
|       | 14. | Rev. A. E. Krom, Providence, MASTER OF THE SITUATION.   |
|       | 21. | Supt. W. H. Small, Providence, THE ANCIENT SCHOOLMASTER.  |
| April | 11. | Rev. A. M. Lord, Providence, THE ENGLISH HOMES OF THE AMERICAN COLONISTS.   |
|       | 18. | Prof. H. B. Knox, State Normal School, RHODE ISLAND, SOCIAL AND POLITICAL, IN THE LIGHT OF ITS HISTORY.               |
|       | 25. | Rev. Frank Rector, Pawtucket, LESSONS FROM DUST AND DIRT.   |
| May   | 2.  | Col. D. R. Ballou, Providence, COUNTRY LIFE THE CONSERVING FORCE OF THE AMERICAN HOME AND OF REPUBLICAN INSTITUTIONS. |
|       | 9.  | A Forestry Program.   |
|       | 16. | Hon. A. M. Eaton, Providence, ROGER WILLIAMS, THE MAN.  |
|       | 23. | Hon. Sumner Mowry, Peace Dale, POPULAR ELECTION OF SENATORS TO CONGRESS.  |

## The Rhode Island College Lecture Association.

Faculty and students, uniting with residents of the vicinity, conduct a winter lecture course, the aim of which is to introduce talented speakers upon subjects both entertaining and instructive. The association may be looked upon as a permanent and important factor in college activities. For the season of 1906-1907 the following lecturers were secured:

- Jan. 16. Henry Oldys, U. S. Dept. of Agr., BIRDS AND THEIR SONGS.
- Feb. 8. Dr. Charles A. Eastman, THE REAL INDIAN.
- March 1. Frederick W. Bancroft, ENGLISH SONGS AND SONG WRITERS.
- 22. Dr. William L. Felter, THE COURTSHIP OF MILES STANDISH.
- April 5. The Colonial Orchestral Club. Maude Fowler, Reader.

## The Library.

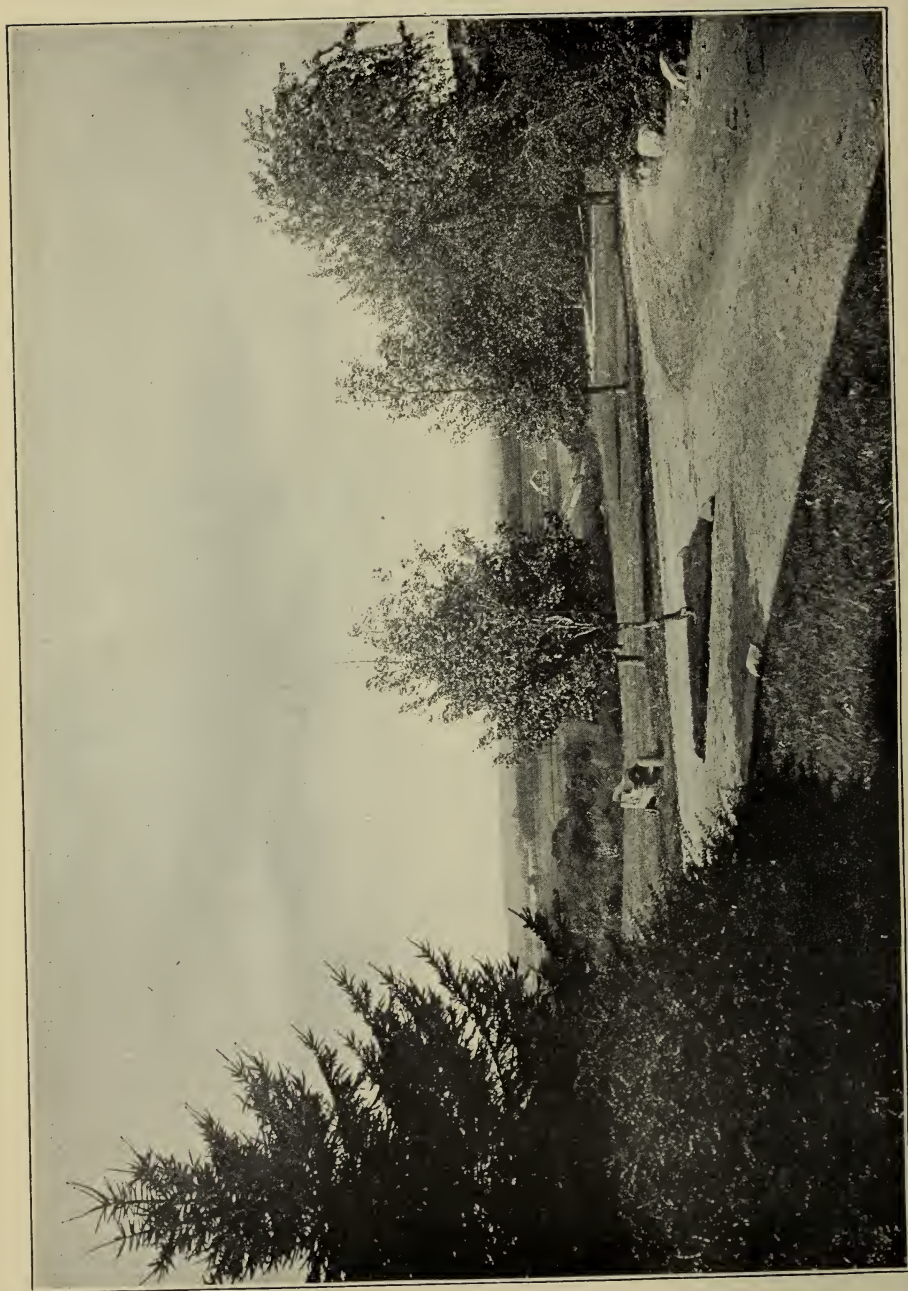
The library occupies a large room in Lippitt Hall, and numbers over fourteen thousand volumes. The books are arranged in stacks, to which the students have free access. The Dewey system of classification is used; and a dictionary catalogue gives author, subject, and title. As the library has been from the first intended for reference work, the various departments of instruction have made their selections with the greatest care. Combined with the library is the reading-room, where one hundred of the leading periodicals—of literary, scientific, and general interest—are on file. From time to time these are bound, and prove of great value in research work.

The library is open every week day from 7:30 A. M. to 6:00 P. M., with the exception of a half-hour at noon. The librarian or her representative is in constant attendance to aid any one in search of information. As the college is an institution designed to further the educational interests of Rhode Island, all residents of the state are at liberty to use its library.

## Location.

The college campus is one and a half miles from Kingston station, which is at the junction of the main line of the N. Y., N. H., & H. R. R. with the Narragansett Pier branch, thus insuring excellent railroad accommodations. The buildings are on a hill which commands an extended view of the surrounding country—a location both healthful and beautiful.





## The Courses of Study Leading to a Degree.

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EXPLANATORY.—The Roman numeral following a subject refers to the subject number; the Arabic figures next following indicate the page of the catalogue on which the subject is described. The last Arabic figure indicates the number of hours credit for the subject. A credit is given for one recitation; or for one exercise of two hours in laboratory, field, or shop. Consulting with the committee on courses of study, the student chooses his electives from the subjects described on pages 38-66. For requirements for admission to these courses, see pages 24-26.



## Freshman Year.

<i>Agriculture.</i>			<i>Engineering.</i>			<i>Teachers' Course in Applied Science.</i>			<i>Home Economics.</i>		
First Term.		Second Term.	First Term.		Second Term.	First Term.		Second Term.	First Term.		Second Term.
Subjects.		Credits.	Subjects.		Credits.	Subjects.		Credits.	Subjects.		Credits.
English I (58).....		2	English I (58).....		2	English I (58).....		2	English I (58).....		2
Modern Language I (59) or VI (60).....		4	Modern Language I (59) or VI (60).....		4	Modern Language I (59) or VI (60).....		4	Modern Language I (59) or VI (60).....		4
Mathematics I (60).....		3	Mathematics III (61).....		5	Mathematics III (61).....		5	Mathematics III (61).....		5
Mathematics II (61).....		3½	Mathematics IV (61).....		3½	Mathematics IV (61).....		3½	Mathematics IV (61).....		3½
Chemistry I (46).....		3	Chemistry I (46).....		3	Chemistry I (46).....		3	Chemistry I (46).....		3
Botany I (45).....		2	Mechanics VIII (54).....		3	Botany I (45).....		1	Botany I (45).....		2
Agronomy I (39).....		2	Mechanics IX and XI (54).....		2	Mechanics VIII (54).....		1	Mechanics V (54).....		2
Horticulture I (43).....		2	Freehand Drawing I (48).....		2	Freehand Drawing II (48).....		1	Freehand Drawing II (48).....		1
Animal Husbandry I (41).....		1	Mechanics I (53).....		2	Freehand Drawing III (48).....		2	Freehand Drawing III (48).....		1
Animal Husbandry II (42).....		1½	Military Drill and Tactics (62)2		2	Military Drill and Tactics (62)2		2	Physical Exercise.....		1
Freehand Drawing II (48).....		2	Military Drill and Tactics (62)2		2	Note.—Women students in this course take the Freshman year of the course in Home Economics.					
Mechanics I (53).....		2									
Military Drill and Tactics (62)2		2									

## Sophomore Year.

First Term.			First Term.			First Term.			The Sophomore, Junior, and Senior years of this course will be published later.		
Subjects.		Second Term.	Subjects.		Second Term.	Subjects.		Second Term.			Second Term.
		Credits.			Credits.			Credits.			Credits.
English II (58).....		2	English II (58).....		2	English II (58).....		2			2
Modern Language II (59) or VII (60).....		3	Modern Language II (59) or VII (60).....		3	Modern Language II (59) or VII (60).....		3			3
Chemistry II (46).....		3	Chemistry II (46).....		4	Chemistry II (46).....		4			4
Physics I (63).....		3	Physics II (63).....		1½	Physics II (63).....		1½			1½
Botany II (45).....		3	Physics III (63).....		5	Physics III (63).....		3			3
Zoology I (65).....		3	Mathematics V (61).....		3	Botany II (45).....		3			3
Zoology II (65).....		4	Mathematics VI (61).....		3	Zoology II (65).....		3			3
Animal Husbandry XII (42).....		1	Mechanics III (53).....		3	Zoology IX (66).....		1			4
Agronomy VII (39) and II (39)2		2	Highway Engineering I (51).....		2½	Chemistry III (46).....		4			4
Horticulture II (43).....		2	Mechanics II (53).....		2	Military Drill (62).....		1			1
Highway Engineering I (51).....		2½	Mechanics XIII (54).....		1						
Mechanics VII (54).....		1	Military Drill (62).....		1						
Military Drill (62).....		1									



*Teachers' Course in Applied Science.*

First Term.	Second Term.
Subjects.	Credits.
English III (58).....	3
English IV (59).....	2
History I or II (57).....	2
Military Drill (62).....	1
Option.....	10
To be chosen from the following departments of instruction:	
A. Chemistry (46) (47).	
B. Biology [Botany (44) and Zoölogy (65)]	
C. Agriculture (38).	
Elective.....	5
Subjects not selected for the option to be chosen.	

*Engineering.*

First Term.	Second Term.
Subjects.	Credits.
English III (58).....	3
English IV (59).....	2
History I or II (57).....	2
Mechanics XV (54), XVI, XVII (55).....	3
Mechanics XIX, XXI (55).....	5
Chemistry VIII (47).....	2
Military Drill (62).....	1
Options: A, B, C, D.	
One of these must be chosen.	
A. Mechanical Engineering:	
Mechanics IV (54).....	2½
Mechanics X and XIII (54).....	4½
Mechanics XVIIa, XX, XXII (55), Physics V (64).....	5
B. Electrical Engineering:	
Electrical Engineering VII (50).....	3
Electrical Engineering I, III (49).....	3
Electrical Engineering IV (49).....	1*
Electrical Engineering II (49), Physics V (64).....	3
Electrical Engineering VI (50).....	3
Electrical Engineering V (49).....	2
Physics IV (64).....	2
Mathematics VII (61).....	2
C. Highway Engineering:	
Highway Engineering II (51).....	5
Highway Engineering III (51), V (52).....	5
Highway Engineering IV (52).....	2
Geology I (57).....	2
Chemistry V (46).....	1½
Mechanics XVIIa, XX, XXII (55).....	5
D. Chemical Engineering:	
Electrical Engineering VII (50).....	3
Chemistry III (46).....	4
Chemistry IV (46).....	3
Chemistry VI, VII (46).....	6
Chemistry V (46).....	3
Electrical Engineering VII (50).....	1½
Electrical Engineering VII (50).....	3

*Agriculture.*

First Term.	Second Term.
Subjects.	Credits.
English III (58).....	3
English IV (59).....	2
History I or II (57).....	2
Military Drill (62).....	1
Chemistry XIV (47).....	4
Zoölogy IV (65).....	4
Botany IV (45).....	2
Agronomy III (39).....	4
Animal Husbandry VII (41).....	1½
Animal Husbandry VI (41).....	1½
Horticulture III (43).....	2
Horticulture IV (43).....	1
Mechanics XII (54).....	1
Mechanics XIIIa (54).....	1½
Options: A, B, C.	
One of these must be chosen.	
Each group receives 5 credits for each term.	
A. Agronomy:	
Subjects IV, V, VI (39).	
B. Horticulture:	
Subjects V (43), VI, VII (44).	
C. Animal Husbandry:	
Subjects IV, VI, IX (41).	
or	
Subjects XIV, XIII (42).	

## Senior Year.

*Teachers' Course in Applied Science.**Engineering.**Agriculture.*

<i>Agriculture.</i>		<i>Engineering.</i>		<i>Teachers' Course in Applied Science.</i>	
First Term.	Second Term.	First Term.	Second Term.	First Term.	Second Term.
Subjects.	Credits.	Subjects.	Credits.	Subjects.	Credits.
English V (59).....	3	English V (59).....	3	English V (59).....	3
History III (58).....	2	History III (58).....	2	History III (58).....	3
Economics I (48).....	2	Economics I (48).....	3	Economics I (48).....	2
Military Drill (62).....	3	Military Drill (62).....	1	Military Drill (62).....	1
Thesis.....	1	Thesis.....	2	Thesis.....	3
Options A, B, C.	3	Options A, B, C, D.	3	Option.....	10
One of these must be chosen.		One of these must be chosen.		To be chosen from the following departments of instruction:	
A. Agronomy:		A. Mechanical Engineering:		A. Chemistry (45).....	(44) and Zoology (65).
Subjects VIII (39), IX, X, XI (40).		Mechanics XIII (54).....	1½	B. Botany [Botany (44) and Zoology (65)].	
Mechanics VII (54).		Mechanics XXIII (55).....	4	C. Agriculture (38).	
B. Horticulture:		Mechanics XXV (56).....	3		
1. Subjects VIII, IX (44).		Mechanics XXVI (56).....	3		
2. Subjects X, XI, XII (44);		Electrical Engineering VIII (50).....	3		
or		Electrical Engineering IX (59).....	3		
Subject XIII (44).		Physics VI (64).....	3		
C. Animal Husbandry:		Electrical Engineering X (50).....	3		
Subjects II, V, VIII, X (41), XI		Electrical Engineering XI, XII	6		
(42); or		Electrical Engineering XIII, XIV	5		
Subjects V, VIII (41), XV, XVI,		Highway Engineering VI (52).....	2		
XVII (42).		Highway Engineering VII (52).....	4		
		Highway Engineering VIII, IX (52).....	9		
		Highway Engineering X, XI (52).....	5		
		Highway Engineering XII, XIII	5		
		(53).....	4		
		Mechanics XVIII (55).....	4		
		Chemical Engineering:			
		Chemistry IX (47).....	4		
		Chemistry X (47).....	4		
		Chemistry XI (47).....	3		
		Chemistry XII (47), XIII (47).....	7		
		Mechanics XVIII (55).....	4		

# The Courses of Study Leading to a Certificate.

The requirements for admission to the Sub-Freshman course are arithmetic, English grammar, geography, and United States history. The only scholarship requirement for admission to the Short Courses in Agriculture and Engineering is a common-school education. The age for admission to all three courses must be at least sixteen years. The courses lead to a certificate.

## Sub-Freshman.

### FIRST YEAR.

First Term.	Second Term.
Subjects.	Credits.
English C (59).....	5
History A (58).....	2
Mathematics A (61).....	5
Physics A (64).....	3
Botany A (45).....	3
Freehand Drawing II, III (48).....	1
or	
Mechanics A (56).....	1
Military Drill (62).....	1

## Short Course in Agriculture.

### FIRST YEAR.

First Term.	Second Term.
Subjects.	Credits.
English A (59).....	4
Mathematics C, D (61).....	4
Botany A (45).....	4
Zoology A (66).....	3
Agronomy C (40).....	4½
Horticulture A (44).....	3
Animal Husbandry A, B (42).....	3
Mechanics H (56).....	4
Mechanics I (56).....	1½
Military Drill (62).....	1

## Short Course in Engineering.

### FIRST YEAR.

First Term.	Second Term.
Subjects.	Credits.
English A (59).....	4
Mathematics C, D (61).....	4
Mechanics A (56).....	4
Mechanics B (56).....	3
Mechanics D (56).....	4½
Freehand Drawing I (48).....	3
Physics A (64).....	2
Military Drill (62).....	3
	1

### SECOND YEAR.

English D (59).....	3
Latin A (60).....	5
Mathematics B (61).....	3
Mathematics E (61).....	4
Physics B (64).....	2½
Mechanics G (56).....	1
or	
Mechanics F (56).....	1
Military Drill (62).....	1

### SECOND YEAR.

English B (59).....	3
Mathematics F (61).....	4
Chemistry A (47).....	4
Agronomy A (40).....	4
Agronomy B (40).....	3
Animal Husbandry C, D (42).....	3
Animal Husbandry E, F (42).....	3
Horticulture B (44).....	4
Mechanics J (57).....	2
Military Drill (62).....	1

### SECOND YEAR.

English B (59).....	3
Mathematics F (61).....	4
Mechanics C (56).....	4½
Mechanics E (56).....	5
Physics B (64).....	2½
Military Drill (62).....	1

## Departments of Instruction.

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The following subjects are offered in the different departments. All subjects in the department of instruction preceded by a Roman numeral count towards the degree of B. S. All subjects preceded by a capital letter lead to a certificate.

### Agriculture.

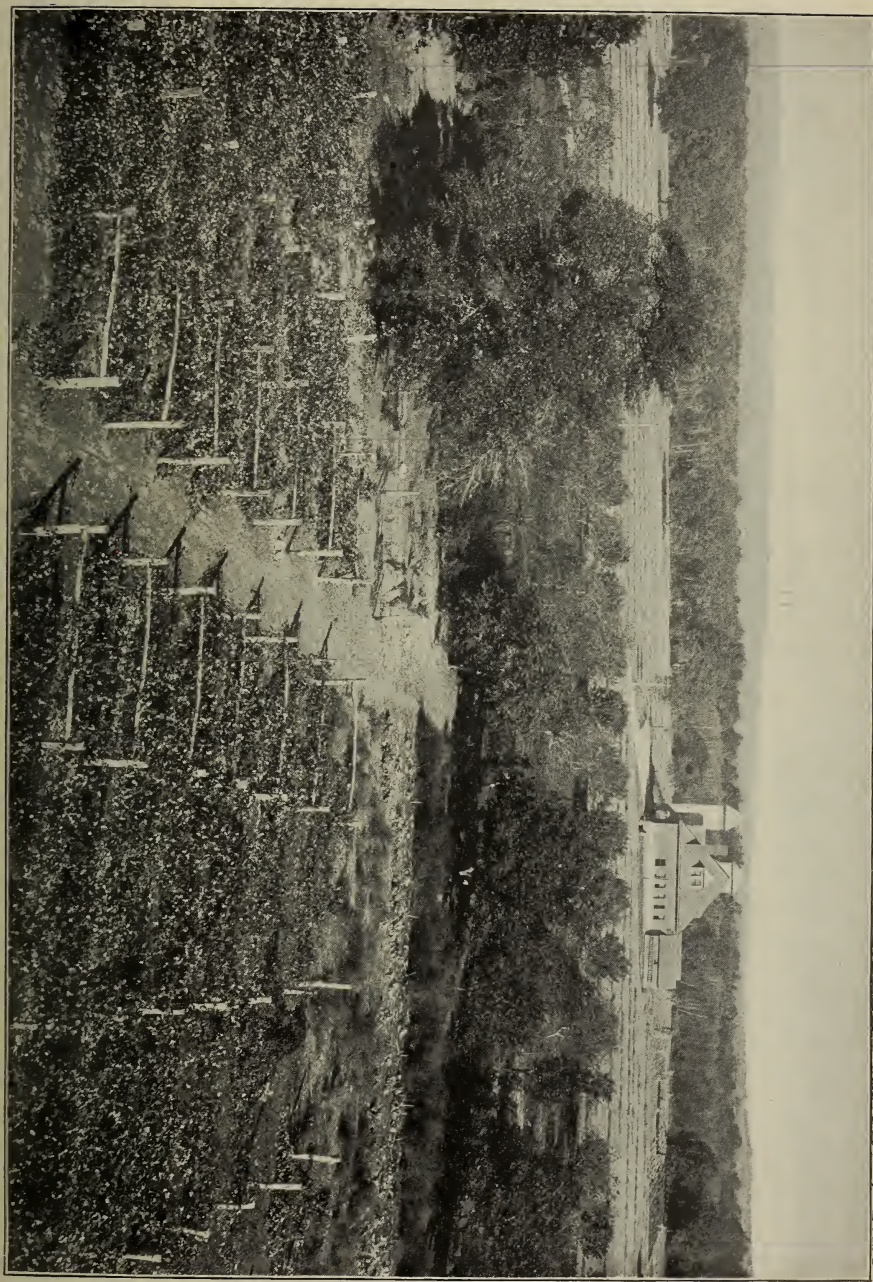
PROFESSOR ADAMS, ASSISTANT-PROFESSOR BOLTE, MR. BURDICK, MR. SCHAEFER.

The instruction given in this subject is grouped under the three heads, agronomy, animal husbandry, and horticulture. The aim of these departments is to give such theoretical and practical training in the fundamentals of agriculture as will enable those who take these courses to fill positions of trust and responsibility, either as owners of their own farms, managers of estates, or along other lines of agricultural activity. Students are expected to use the library, which contains, among other valuable works, a complete set of experiment-station publications, also many of the publications of the United States Department of Agriculture, together with numerous state reports upon agricultural subjects.

### AGRONOMY.

The instruction in agronomy begins in the first term of the Freshman year, when the fundamental operations which are conducted upon every farm are considered. Following this work, are subjects dealing with the various field crops and their uses as food for man and beast. The business side of farm life is given attention in the subjects treating of farm equipment and management. Work with farm machinery is a laboratory course, in which the students are





HORTICULTURAL DEPARTMENT.



taught how to care for, repair and operate modern farm machinery. In the Senior year there is instruction in plant breeding, a subject which is of the utmost importance to one who would make the most of the opportunities in crop production. Instruction in agricultural experimentation deals largely with the application of the results which have been obtained by the experiment stations, to the practical problems of the farm.

The equipment of the department includes the college farm and barns; also the farm machinery, consisting of a good line of tillage implements, fertilizer distributors, grain drill, and harvesting machinery. A well equipped blacksmith shop is also provided.

Students have the advantage of the field experiments which are being conducted by the experiment station upon fertilizer problems and with various rotations.

### Subjects.

I. Principles of Agriculture.—History of agriculture. Discussion of the general underlying principles which govern farm operations. *Two recitation credits per week, first term. Required of Freshmen in Agriculture.*

II. Forage Crops.—History and development of the plants used for forage; silage, methods of construction of silos. *Two recitation credits per week, second term. Required of Sophomores in Agriculture.*

III. Soils and Fertilizers.—Origin and constituents of soils; texture, moisture, drainage, methods of tillage. Farm manures, artificial manures, composition and use; formulas for various crops. *Three recitation and one laboratory credits per week, first term. Required of Juniors in Agriculture.*

IV. Farm Crops.—Origin and history; production and place in the rotation of clovers, grasses, and root crops. *Agronomy option for Juniors in Agriculture.*

V. Farm Equipment.—Selection and equipment of farms, buildings, fences, roads, water supply, farm power, machinery. *Agronomy option for Juniors in Agriculture.*

VI. Farm Machinery.—Development of farm machinery, methods of construction, function, and operation. *Agronomy option for Juniors in Agriculture.*

VII. Farm Management.—Discussion of agricultural methods, choice of a farm, capital, marketing, types of farming, accounts. *Two recitation credits per week, first term. Required of Sophomores in Agriculture.*

VIII. Farm Management (advanced).—Individual problems of farm management are assigned. Abandoned farms will be visited and a critical study made of the existing conditions. *Agronomy option for Seniors in Agriculture.*



IX. Literature.—History of agricultural and horticultural literature; a study of the different types of agricultural literature as illustrated by ancient and modern authors. Reports upon special topics. *Agronomy option for Seniors in Agriculture.*

X. Agricultural Experimentation.—Objects, methods, and results of agricultural experimentation. A study of federal and state aid to agriculture as shown in the work of the United States Department of Agriculture and the Experiment Stations. *Agronomy option for Seniors in Agriculture.*

XI. Plant Breeding.—A discussion of the development of plants under cultivation; with reference to heredity, environment, variation, and selection. *Agronomy and Horticultural option for Seniors in Agriculture.*

XII. Thesis. *Three credits per week throughout the year. Required of Seniors in Agriculture.*

A. Soils and Fertilizers.—An elementary course upon the origin and nature of soils. Fertilizers; natural and artificial manures; preparation and use; fertilizer arithmetic. *Three recitation and one laboratory credits per week, first term. Required of Short-Course students in Agriculture, second year.*

B. Crops and Rotations.—Methods of culture and uses of the grasses, clovers, cereals, and root crops. Rotation for the various types of farms. *Three recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.*

C. Farm Management and Accounts.—An elementary course upon the principles of farm management, equipment, and farm bookkeeping. *Three recitation credits per week, first term. Required of Short-Course students in Agriculture, first year.*

D. Farm Machinery.—Care and repair of farm implements. *Two laboratory credits for twelve weeks. Required of Short-Course students in Agriculture, second year.*

## ANIMAL HUSBANDRY.

Instruction in animal husbandry is so arranged as to furnish practical as well as theoretical training in the selection, care, and management of the live stock on the farm. Instruction commences with elementary stock judging, breeds, and care in the second term of the Freshman year. During the Sophomore year, instruction is given in poultry craft and dairy practice. These two subjects aim to provide a large amount of practical work in combination with the theoretical. In the Junior year, attention is directed to the breeding and feeding of animals; and in the Senior year the work includes judging, care of animals, and veterinary practice. In veteri-

nary practice, the student is taught to diagnose and prescribe for the common ailments of farm animals.

The equipment is particularly strong on the poultry side. The college poultry plant enables one to obtain a large amount of practical experience in incubation, brooding, and management. In addition to the poultry in the college yards, the students have opportunity to follow the investigations with turkeys which are now being conducted by the experiment station.

In addition to the subjects mentioned below, there is a twelve weeks' course in poultry keeping during the winter months, full information concerning which may be obtained by addressing the president of the college.

### Subjects.

I. Stock Judging.—Scoring and comparison judging of the various types of horses, cattle, sheep, and swine. *Two laboratory credits per week, second term. Required of Freshmen in Agriculture.*

II. Advanced Judging.—Practice in judging breeds and types of the various domestic animals. *Required of Seniors in Animal Husbandry.*

III. Breeds and Care.—An elementary treatment of the subject. *One recitation credit per week, second term. Required of Freshmen in Agriculture.*

IV. Breeds and Breeding.—History and characteristics of the principal breeds of domestic animals. Science and art of practical stock breeding. *Required of Juniors electing Animal Husbandry.*

V. Care of Animals.—Housing, feeding, and managing animals in health and sickness under farm conditions. *Required of Seniors in Animal Husbandry.*

VI. Feeding.—Principles of nutrition. Feeding standards. Rations. *Two recitation credits per week, first term. Required of Juniors in Agriculture.*

VII. Dairy Practice.—Laboratory lectures and practice in handling milk and making butter on the farm. *One and one-half laboratory credits per week, first term. Required of Juniors in Agriculture. Babcock test.*

VIII. Dairy Practice.—Advanced work. *Elective for Seniors in Animal or Poultry Husbandry.*

IX. Research and Literature.—A study of important results in live stock research. *Required of Juniors electing Animal Husbandry.*

X. Veterinary Medicine.—Combating disease from the farmer's standpoint. Obstetrics. Injuries. *Elective for Seniors in Animal Husbandry.*

XI. Farm Buildings.—Plans, location, and estimates on the various farm buildings. (See Mechanical Engineering, VII.) *Elective for Seniors in Animal Husbandry.*

XII. Poultry Craft.—A brief study of breeds, care, and management of all classes of fowls. *One laboratory credit per week, first term. Required of Sophomores in Agriculture.*

XIII. Poultry Practice.—Practice work in handling fowls, incubation, and brooding. *Five credits per week, second term. Time for this subject can not be regularly scheduled. Required of Juniors electing Poultry Husbandry.*

XIV. Poultry Breeding and Literature.—Science and practice of poultry breeding. Study of important literature on poultry investigations. *Required of Juniors electing Poultry Husbandry.*

XV. Judging Poultry.—Practice in scoring and judging all classes of fowls *Required of Seniors in Poultry Husbandry.*

XVI. Poultry Buildings.—Plans, estimates and construction of poultry buildings. (See Mechanical Engineering VI.) *Elective for Seniors in Poultry Husbandry.*

XVII. Instructional Practice.—Seniors in Poultry Husbandry may assist in demonstration work with the Short-Course Class.

XVIII. Thesis.—Original investigation. *Required of Seniors in Animal Husbandry and Poultry Husbandry.*

A. Breeds and Care.—Breeds of horses, cattle, sheep and swine. Housing, care and management of farm animals. *Two recitation credits per week, second term. Required of Short-Course students in Agriculture, first year.*

B. Stock Judging.—Judging of the various classes of animals, and their adaptability for different purposes; as cattle for milk or beef production, horses for driving or draft. *Two laboratory credits per week, second term. Required of Short-Course students in Agriculture, first year.*

C. Dairy Practice.—Babcock test for dairy products, production of sanitary milk and butter making. *One laboratory credit per week, first term. Required of Short-Course students in Agriculture, second year.*

D. Stock Feeding.—Principles of nutrition, compounding of rations. *Two recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.*

E. Breeding and Veterinary Practice.—A study of the principles of breeding, selection, heredity, and variation. Methods of treating common diseases of farm animals. *Two recitation credits per week, second term. Required of Short-Course students in Agriculture, second year.*

F. Poultry Breeds and Care.—A study and comparison of the different breeds of poultry, care of incubators and brooders, methods of feeding for the production





HORTICULTURAL LABORATORY AND GREENHOUSES.



of meat and eggs. *One laboratory credit per week, second term. Required of Short-Course students in Agriculture, second year.*

## HORTICULTURE.

The aim of the instruction in horticulture is to help the student to understand the practical and scientific problems which arise in the various lines of work included under this subject.

The headquarters of the department are in the new horticultural building which was erected in 1906. The main building contains the office and recitation rooms, together with photographic rooms. Attached to this building are greenhouses of modern construction, containing over 8,000 square feet under glass, 3,000 square feet of which is used by the experiment station for fertilizer experiments. The remainder is devoted to college work, and thus affords an excellent opportunity to become familiar with the growth of plants under glass. The land devoted to the department comprises the college gardens; and the fruit orchards, containing over 150 varieties of fruit, which afford an excellent opportunity for the study of apples and pears especially. There is also a small vineyard. A collection of flowering shrubs enables the student in landscape gardening to study, in the natural state, the material used in this work.

### Subjects.

I. Propagation of Plants.—Seedage, methods of seed testing; cuttage, hard and soft wood cuttings; layerage and graftage. *One recitation and one laboratory credit per week, first term. Required of Freshmen in Agriculture.*

II. Vegetable Gardening.—Methods of growing and marketing vegetables. *Two recitation credits per week, second term. Required of Sophomores in Agriculture.*

III. Fruit Culture.—Principles and practice of orcharding and growing of bush fruits. *One recitation credit per week, second term. Required of Juniors in Agriculture.*

IV. Spraying and Pruning.—Spray mixtures, preparation and use; fungicides; insecticides; spraying machinery; methods of pruning different classes of trees and shrubs. *One laboratory credit per week, second term. Required of Juniors in Agriculture.*

V. Greenhouse Construction and Management.—Construction and heating of greenhouses, preparation of plans, watering, ventilating. *Horticultural option for Juniors in Agriculture.*



VI. Floriculture.—A study of greenhouse plants; annuals; herbaceous perennials; bulbs for bedding and forcing. *Horticultural option for Juniors in Agriculture.*

VII. Vegetable Forcing.—Methods of growing vegetables under glass; in houses, hotbeds, and cold-frames. *Horticultural option for Juniors in Agriculture.*

VIII. Literature of Horticulture.—See Agronomy IX.

IX. Investigation.—Special problems upon subjects in which the student is particularly interested. *Horticultural option for Seniors in Agriculture.*

X. Pomology.—Classification and description of orchard fruits. *Horticultural option for Seniors in Agriculture.*

XI. Advanced Vegetable Gardening.—Study of varieties for special purposes; market-garden rotations and equipment. *Horticultural option for Seniors in Agriculture.*

XII. Plant Breeding.—See Agronomy X.

XIII. Landscape Gardening.—The principles underlying landscape gardening as applied to the development of home grounds, school grounds, parks, cemeteries, and estates. *Horticultural option for Seniors in Agriculture.*

A. Vegetable Gardening.—Methods of growing vegetables; hotbed and cold-frame management; garden rotations. *Three recitation credits per week, second term. Required of Short-Course students in Agriculture, first year.*

B. Fruit Culture.—The location of orchards and fruit plantations; methods of tillage, pruning, spraying for insects and fungous diseases. Varieties for home and market. *Three recitation and one laboratory credits per week, second term. Required of Short-Course students in Agriculture, second year.*

## Botany.

PROFESSOR MERROW.

The aim of the department is to give a general knowledge of plant life, followed by subjects of an economic nature. The college is well located for carrying on this line of work. The native flora is extensive, and an abundance of material is furnished by the cultivated plants of the gardens and fields of the college farm. The greenhouses supply fresh material for winter use, and the herbarium of 4,000 specimens is a useful reference collection. The laboratory is equipped with dissecting and compound microscopes, a microtome, paraffin bath, and simple physiological apparatus. Charts and models are provided for lecture demonstrations. A good working library, including several American and foreign periodicals, is an important factor in the outfit for botanical instruction.

## Subjects.

I. General Botany.—A study of common plants, their structure, physiology, evolution, and adaptation to environment. *Two laboratory credits and one recitation credit per week, throughout the year. Required of Freshmen in Agriculture, Applied Science, and Home Economics.*

II. Economic Botany.—The systematic botany of crops and weeds. *Two laboratory credits and one recitation credit per week, first term. Required of Sophomores in Agriculture, and Applied Science.*

III. Trees and Shrubs.—The determination of native and introduced trees and shrubs in summer and winter condition. *One laboratory or field credit per week throughout the year. Required in a Horticultural option in the Agricultural course. May be elected by other students having a minimum of six credits in Botany.*

IV. Forestry.—*Two recitation credits per week, second term. Required of Juniors in Agriculture. Elective in Applied Science.*

V. Histology.—Seed plants are studied by the usual histological methods of imbedding, sectioning, and staining. *Two and one-half laboratory credits and one recitation credit per week, first term. Elective in Agriculture, and Applied Science.*

VI. Pathology.—Diseases caused by parasitic fungi and the remedies for them. *Two and one-half laboratory credits and one recitation credit per week, second term. Elective in Agriculture, and Applied Science.*

VII. Botanical Literature.—Current literature of periodicals, and bulletins of the U. S. Department of Agriculture and Experiment Stations. *One recitation credit per week, throughout the year. Elective for students with a minimum of nine credits in Botany. This subject may be elected more than once.*

VIII. Special Botany.—Advanced Histology or Pathology may sometimes be given, if applied for.

A. Plant Life.—Elementary Agricultural Botany. *Two laboratory credits and one recitation credit per week throughout the year. These credits count for entrance to the college courses, and for a certificate in the Short-Course in Agriculture. Required in the first year of the Sub-Freshman Course, and of the Short-Course in Agriculture.*

## Chemistry.

DR. LEIGHTON, MR. BIDWELL.

Instruction in this department begins in the Freshman year with experimental lectures, recitations, and laboratory practice in general and descriptive chemistry. As much attention as is practicable in a

general course is given to the applications of the science to the problems of life. Qualitative analysis extends through one term of the Sophomore year, a portion of the time being devoted to lectures and recitations, but the greater part to practical work in the laboratory. The above subjects are required of all candidates for a degree, as essential to a liberal education, and are preparatory to the subsequent subjects which are designed for students desiring to make chemistry—their profession, either as teachers or practical chemists. The department also affords opportunity for work in quantitative analysis, organic chemistry, industrial chemistry, gas analysis, assaying, agricultural chemistry, mineralogy, blowpipe analysis, and metallurgy.

The laboratory is thoroughly equipped with apparatus for the above-mentioned subjects, and opportunity is also given for graduate students to continue in various lines of technical chemistry. A large number of German, French, and English chemical journals are accessible, thus affording excellent opportunity for research work.

### Subjects.

I. General Chemistry.—*Two recitation and one and one-half laboratory credits per week, throughout the year. Required of Freshmen in all courses.*

II. Qualitative Analysis.—Basic and acid analysis; analysis of salts, industrial and natural products. *One recitation and two laboratory credits per week, throughout the year. Required of Sophomores in all courses.*

III. Organic Chemistry.—*Three recitation and one laboratory credits per week, second term. Required of Juniors in Chemical Engineering and of Sophomores in Applied Science. Elective for others who have completed Chemistry II.*

IV. Quantitative Analysis.—Gravimetric and Volumetric Analysis. Analysis of minerals, ores, alloys, and industrial products. *Six laboratory credits per week, first term; three laboratory credits per week, second term. Required of Juniors in Chemical Engineering. Elective for others who have completed Chemistry II.*

V. Determinative Mineralogy.—*One and one-half laboratory credits per week, first term. Required of Juniors in Chemical Engineering and Highway Engineering. Elective for others who have completed Chemistry II.*

VI. Gas Analysis.—*One and one-half laboratory credits per week, first term. Required of Juniors in Chemical Engineering. Elective for others who have completed Chemistry II.*

VII. Assaying.—*One and one-half laboratory credits per week, first term.*





A STUDIO CORNER.

*Required of Juniors in Chemical Engineering. Elective for others who have completed Chemistry II.*

VIII. Metallurgy.—*Two recitation credits per week, first term. Required of Juniors in all Engineering courses. Elective for others who have completed Chemistry II.*

IX. Physical Chemistry.—*Three recitation and one laboratory credits per week, first term. Required of Seniors in Chemical Engineering. Elective for others who have completed Chemistry II.*

X. Organic Chemistry (advanced).—*Three recitation and one laboratory credits per week, first term. Required of Seniors in Chemical Engineering. Elective for others who have completed Chemistry III.*

XI. Organic Chemical Laboratory.—*Three laboratory credits per week, second term. Required of Seniors in Chemical Engineering. Elective for others who have completed Chemistry X.*

XII. Industrial Chemistry.—*Four recitation credits per week, second term. Required of Seniors in Chemical Engineering. Elective for others who have completed Chemistry III.*

XIII. Industrial Chemistry.—*The work under this subject may be varied to suit the needs of individual students; including such subjects as technical analysis, textile coloring. Three laboratory credits per week, second term. Required of Seniors in Chemical Engineering. Elective for those who take Chemistry XII.*

XIV. Agricultural Chemistry.—*Three recitation and one laboratory credits, first term. Required of Juniors in Agriculture.*

XV. Thesis.—*Required of Seniors in Chemical Engineering and those who take the Chemical option in Applied Science.*

A. Chemistry of Plant and Animal Life.—*Three recitation and one laboratory credits per week. Required of Short-Course students in Agriculture, second year.*

## Freehand Drawing.

MISS ELDRED.

The object of the freehand drawing is to supply the practice in drawing necessary for subsequent work in the drafting-room and the science laboratories, and to give some knowledge of the elements of art and some appreciation of the beautiful in art and nature. The work for the first term of the Freshman year is designed to meet the later requirements of mechanical and scientific drawing. The engineering students, after short practice in freehand lettering, spend the remainder of the term in pencil outline drawing, paying especial atten-



tion to the subject of freehand perspective, as illustrated by geometrical models and other objects. In the agriculture and science courses, the work of the first term comprises outline drawing in pencil from plant and animal forms. The work of the second term in the science courses is planned upon broader lines, and includes, especially for the course in home economics, some attention to the principles of design. Further work in representation and in design is offered in elective subjects. The history of art is taught by lectures illustrated by photographs and casts. The department is well supplied with illustrative material of this kind, and with books of reference.

### Subjects.

I. Freehand Lettering: Pencil Drawing from Objects.—*Two laboratory credits per week, first term. Required of Freshmen in Engineering and of Short-Course Engineers.*

II. Pencil Drawing from Objects.—*One laboratory credit per week, first term. Required of Freshmen in Agriculture, Home Economics, and Applied Science; an option for Sub-Freshmen, one laboratory credit throughout the first year.*

III. Drawing in Pencil and Charcoal from Objects and Casts.—*One laboratory credit per week, second term. Required of Freshmen in Applied Science; an option for Sub-Freshmen, one laboratory credit per week, second term; two laboratory credits per week, second term. Required of Freshmen in Home Economics.*

IV. Drawing in Charcoal from Still Life and the Cast.—*Two laboratory credits per week, second term. Elective.*

V. Pen-and-Ink Drawing, Water-Color, or Pastel.—*Two laboratory credits per week, second term. Elective.*

VI. Modeling.—*Two laboratory credits per week, second term. Elective.*

VII. History of Art.—Lectures. *One recitation credit per week, throughout the year. Elective.*

## Economics and Social Science.

PRESIDENT EDWARDS.

### Subjects.

I. Political Economy.—Text-book, supplemented by lectures, readings, and essays. The first term is devoted to the general principles of the subject; second term, to consideration of present-day problems. *Two recitation credits per week, first term; three recitation credits per week, second term. Required of Seniors in all courses.*

II. Agricultural Economics.—The study of agriculture as an industry, from the point of view of political economy. Includes a study of the agricultural market; transportation of agricultural products; agricultural labor; farm ownership and tenancy; mortgages, etc. *Elective*. President Edwards.

III. Rural Sociology.—Movements of the farm population—causes and results; general social conditions of farmer, such as illiteracy, health, crime, etc.; personal and social traits developed by rural life; means of communication in rural communities; the rural school; agricultural education; the country church; farmers' organizations, federation of rural social forces. *Elective*. President Edwards.

## Electrical Engineering.

PROFESSOR TOLMAN, MR. W. S. RODMAN.

Instruction in this department is designed to give a broad knowledge of the theory and application of electrical phenomena and the development of apparatus in electric lighting, the telephone, the transmission of power for electric railways, and other varied uses. The department is well equipped with modern apparatus for electrical measurements and testing. The college lighting plant illustrates a high voltage distribution.

### Subjects.

I. Theory of Direct Current Machinery.—A detailed study of the theory of direct current apparatus. The theory, use, care of the dynamo. *Three recitation credits per week for thirty weeks. Required of all Juniors in Electrical Engineering.*

II. Direct Current Laboratory.—A course following Physics V and consisting of tests of various types of direct current apparatus. These include magnetization and characteristic curves of different types of machines. Efficiency, regulation, temperature, and other tests are included in this course. *Three laboratory credits per week for twenty-four weeks. Required of Juniors in Electrical Engineering.*

III. Storage Batteries.—A course of lectures on the theory, care, and operation of storage batteries. *Three recitation credits per week for six weeks, second term. Required of Juniors in Electrical Engineering.*

IV. Theory of Dynamo Design.—Lectures and recitations on the design of dynamos and motors, dealing with the materials of construction, drawing, and calculations necessary in the design of a direct current dynamo or motor. *One recitation credit per week, first term. Required of Juniors in Electrical Engineering.*

V. Drawing.—A detailed study of the construction of a dynamo. The student is required to make actual measurements and drawings of the parts of a dynamo

and then make an assembly drawing, giving a view of the machine as a whole. *Two laboratory credits per week, first term. Required of Juniors in Electrical Engineering.*

VI. Dynamo Design.—The design of a direct current machine. *Three laboratory credits per week, second term. Required of Juniors in Electrical Engineering.*

VII. General Electricity.—A course covering briefly the care and use of electrical generators, motors, batteries, switchboards, and measuring devices. *Three recitation credits per week, second term. Required of Juniors in Mechanical, Highway, and Chemical Engineering.*

VIII. Theory of Alternating Currents.—Recitations and Lectures. Alternating current theory and practice dealing with alternating current machinery, such as the A. C. dynamos, synchronous and induction motors, converters, and transformers. *Three recitation credits per week throughout the year. Required of Seniors in Electrical Engineering.*

IX. Alternating Current Laboratory.—A course following Physics VIII and consisting of tests of different types of alternating current apparatus. Single and poly-phase generators and motors, synchronous and induction motors, converters, and transformers. *Three laboratory credits per week for thirty weeks. Required of Seniors in Electrical Engineering.*

X. Dynamo Design.—A design of some form of alternating current apparatus. *Three laboratory credits per week, second term. Required of Seniors in Electrical Engineering.*

XI. Telephone Engineering.—Discussion of the development of the telephone and modern telephone practice. *Three recitation credits per week, first term. Required of Seniors in Electrical Engineering.*

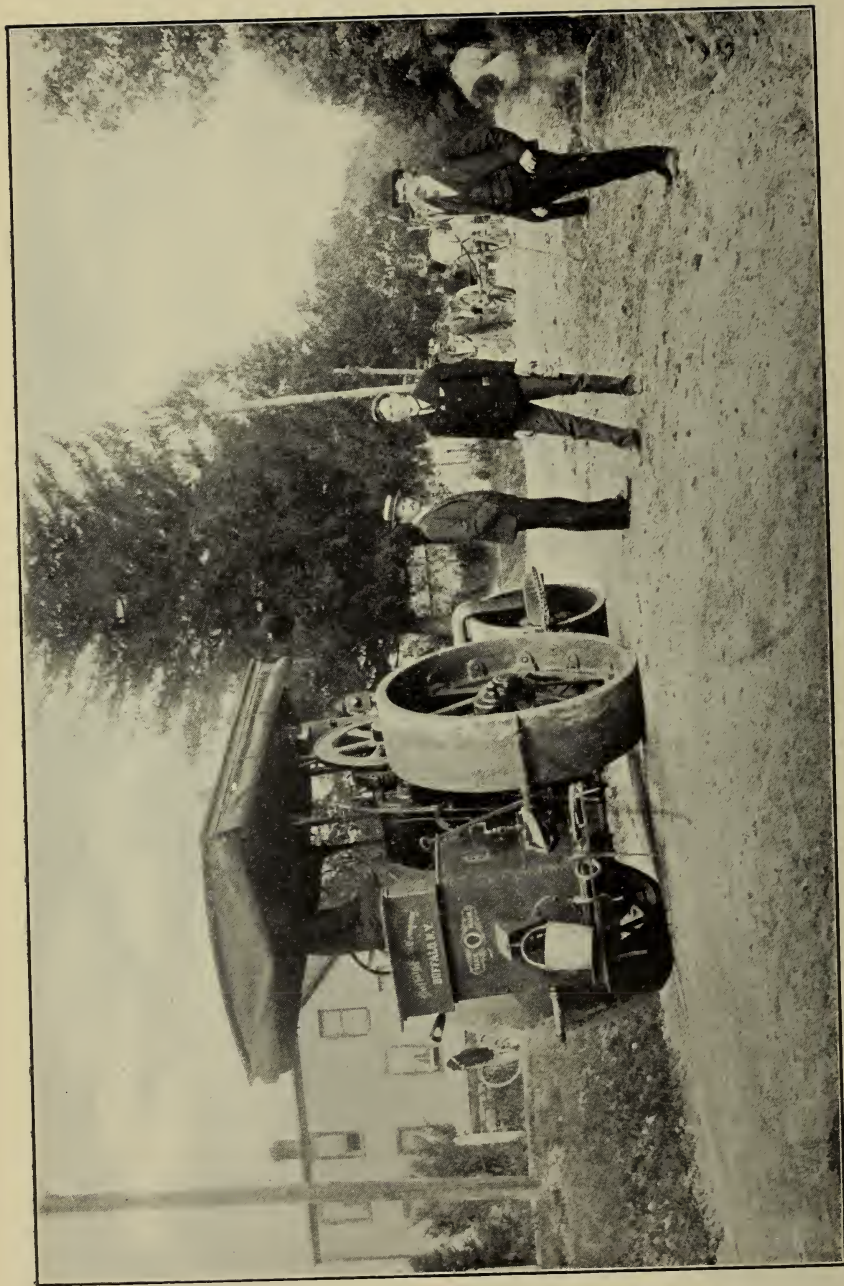
XII. Electric Lighting.—Generation and distribution of electric power for lighting purposes. *Three recitation credits per week, first term. Required of Seniors in Electrical Engineering.*

XIII. Electric Power Transmission.—A study of systems of high tension distribution, including the construction of the lines, insulation, protection, and troubles developing in high tension work. *Three recitation credits per week, second term. Required of Seniors in Electrical Engineering.*

XIV. Electric Railways.—Discussion of economic considerations in the development of an electric railway, the construction, location of generating station, the design of the distributing system, types of motors and systems of control. *Two recitation credits per week, second term. Required of Seniors in Electrical Engineering.*







ROAD BUILDING.

## Highway Engineering.

PROFESSOR BLACK.

While much of the student's time in highway engineering is devoted to practical road and bridge design and construction, it is the chief aim to develop his power of acquiring and ability of applying engineering information. The state appropriates annually a sum of money, which is expended under the direction of the instructor and the students of this department, in the construction and maintenance of roads on the college property. This method enables each of our highway-engineering students to get practical experience in every step required in the actual construction of a gravel or macadam road.

Students have the use of the following equipment: compasses, transits, levels, rods, tapes, chains, maps, drawings, profile drawing tables, road roller, and appliances for testing materials used in construction.

Reading on subjects selected by the head of the department is required of all students during the long vacation following the Freshman, Sophomore, and Junior years.

### Subjects.

I. Surveying.—Study of instruments, and simple surveying with the chain, compass, transit, and level. Practice in the field includes laying out and dividing land, leveling for profiles, and simple city work. The true meridian is determined both by solar and stellar observations. The office work consists in plotting from the notes taken in the field and of calculating areas from these notes and plots. *Three field credits per week, first term. Required of Sophomores in Engineering; two and one-half credits per week, first term. Required of Sophomores in Agriculture.*

II. Higher Surveying.—Railroad work, including a reconnoissance, preliminary and location survey of a short line of railroad in vicinity of Kingston. A complete preliminary estimate of the cost of the line is made from the notes in the office in the winter, and finished plans drawn. Special attention is also given to surveying for street railroads and highway improvement. *Two recitation and three field credits per week, first term. Required of Juniors in Highway Engineering.*

III. Graphic Statics.—Instruction is given in the elements of graphic statics and its applications in the design of simple framed structures. *Two recitation credits per week, second term. Required of Juniors in Highway Engineering.*



IV. Analysis of Stress.—The graphical determination of the stresses in the various types of bridges under different conditions of loading. *Two recitation credits per week, first term. Required of Juniors in Highway Engineering.*

V. Structural Drawing.—The preparation of finished drawings of modern framed structures, including a tracing of a shop drawing of a highway bridge. *Three laboratory credits per week, second term. Required of Juniors in Highway Engineering.*

VI. Bridge Details.—A critical report on the tracing made in the structural drawing course, and computation of the cost of the bridge. This is followed by a comparative study of the various forms of details employed in the design of bridges. *One recitation and one laboratory credit per week, first term. Required of Seniors in Highway Engineering.*

VII. Bridge Design.—Each student is required to make a complete design of a highway bridge. *Two recitation and two laboratory credits per week, second term. Required of Seniors in Highway Engineering.*

VIII. Masonry Construction.—This course deals with the materials of masonry, including brick, stone, lime, and cement; the theory of masonry structures, including foundations for buildings, bridges, and piers; the construction of retaining walls, culverts, bridge abutments; masonry dams and arches. The student is directed to important articles in the current literature of the subject, and laboratory work is performed at intervals, as facilities and ability of the student permit. *Five recitation credits per week, first term. Required of Seniors in Highway Engineering.*

IX. Road Engineering.—This is a course in practical highway work. It includes the application of engineering principles to the preliminary survey, and estimate of cost of building and rebuilding roads in town and country. The subjects of surfacing old and new roads with gravel or stone and the drainage and repair of them receive particular emphasis. The details of staking out work, placing catch-basins, curbs, culverts, etc., and the crushing and rolling of stone are discussed. The student is directed to state and government reports and required to read selected topics in the literature of the subject. The field work of this course consists in the construction of a gravel or a macadam road on the college grounds. *Two recitation and two field credits per week, first term. Required of Seniors in Highway Engineering.*

X. Water Supply Engineering.—A study of the principles governing the tests of water to determine its potableness and the selection of the proper source for the supply of a city. A study of pumps and pumping machinery, reservoirs, stand pipes, and distribution system. *Four recitation credits per week, second term. Required of Seniors in Highway Engineering.*

XI. Tunneling.—A study of the methods of making tunnel surveys and of the methods employed in modern tunnel construction. *One recitation credit per week, second term. Required of Seniors in Highway Engineering.*

XII. Sewerage.—A study of the methods used in making surveys for sewer systems and the principles governing their construction. *Three recitation credits per week, second term. Required of Seniors in Highway Engineering.*

XIII. Contracts.—Instruction is given in the fundamental principles governing the law of contracts and of the correct forms of the various kinds of contracts used in engineering. *Two recitation credits per week, second term. Required of Seniors in Highway Engineering.*

XIV. Thesis.—The preparation of a thesis on some subject connected with the work of this department, involving original investigation or experiment. *Three credits per week throughout the year. Required of Seniors in Highway Engineering.*

XV. Vacation Reading.—Systematic reading during vacations on some topic assigned by the head of this department.

## Mechanical Engineering.

PROFESSOR DRAKE, MR. T. C. RODMAN, MR. CHITTENDEN,  
MR. KNOWLES.

Instruction in the fundamental theories of engineering is given by means of text-books, lectures, and reference reading. Laboratory work is required in mechanical drawing, woodworking, forging, machine shop, strength of materials, steam engineering, and engineering tests. The shops are exceptionally well equipped, and the nature of the work done is such as to give the student a fair degree of manual skill, and to illustrate the operations of present-day shop practice. The production of power by use of the steam or gas engine receives marked attention, the power plants, and the college pumping station furnishing opportunities for practical tests.

### Subjects.

I. Mechanical Drawing.—Elementary principles, use of tools, geometrical problems, projections, screw threads, bolts and nuts, machine parts. *Three laboratory credits, second term. Required of Freshmen in Engineering; one and one-half laboratory credits, second term. Required of Freshmen in Agriculture.*

II. Mechanical Drawing.—Machine details, tracing, blue printing. *Two and one-half laboratory credits, second term. Required of Sophomores in Engineering.*

III. Mechanical Drawing.—Descriptive Geometry of the point, line, plane, and geometrical solids. Intersection of solids, development of surfaces, oblique projection, isometric projection. *Three recitation credits, second term. Required of Sophomores in Engineering.*

IV. Mechanical Drawing.—Machinery design. *Two and one-half laboratory credits throughout the year. Required of Juniors in Mechanical Engineering.*

V. Architectural Drawing.—Plans for dwellings. Lectures on the design and construction of the modern American home. *Two laboratory credits, first term. Required of Freshmen in Home Economics.*

VI. Poultry House Construction.—Practical work in designing the various buildings for a poultry plant. Estimates of materials, fixtures and costs. *Elective for Seniors in Agriculture.*

VII. Farm Buildings.—Plans, estimates, bills of material, specifications, costs. *Elective for Seniors and Juniors in Agriculture.*

VIII. Shop Practice.—Woodworking, benchwork, use of tools, carpentering. *Three shop credits, first term. Required of Freshmen in Engineering. Two and one-half shop credits, second term. Required of Sophomores in Agriculture. One shop credit throughout the year. Required of Freshmen in Teachers' Course in Applied Science.*

IX. Shop Practice.—Woodturning in soft and hard woods. *Three shop credits, three weeks, second term. Required of Freshmen in Engineering.*

X. Shop Practice.—Pattern-making and principles of molding. Patterns are made for some machine designed in the drawing room. *Two shop credits, first term. Required of Juniors in Mechanical Engineering.*

XI. Shop Practice.—Forging, drawing, bending, welding, and tool dressing. *Three shop credits, fifteen weeks, second term. Required of Freshmen in Engineering.*

XII. Shop Practice.—Forging for students in agriculture. Iron work for farm requirements. Repairs to farm machinery. *One shop credit, second term. Required of Juniors in Agriculture.*

XIII. Shop Practice.—Machine Shop. Hand work in chipping, filing, scraping, and finishing. Use of machine tools. Machine construction. *Three shop credits, second term. Required of Sophomores in Engineering. Two and one-half shop credits, first term; three shop credits, second term. Required of Juniors in Mechanical Engineering. One and one-half shop credits, first term; three shop credits, second term. Required of Seniors in Mechanical Engineering.*

XIII a. Shop Practice.—Machine-shop work for students in agriculture. Chipping and filing, tapping and cutting threads, drilling, machine work, and pipe fitting. *One and one-half shop credits, first term. Required of Juniors in Agriculture.*

XIV. Woodcarving.—Care and use of tools, geometrical motives, diaper patterns, incised carving, flat and curved surfaces, historic ornament, low and high relief. *Elective for students in Home Economics and Applied Science.*

XV. Steam Boilers.—Types, construction, strength, uses, and management. *Three recitation credits, six weeks, first term. Required of all Juniors in Engineering.*

XVI. Thermodynamics.—Fundamental principles and formulæ. Direct applications to steam and gas engines. *Three recitation credits, twelve weeks, first term. Required of all Juniors in Engineering.*

XVII. Steam Engines.—Types, valve gears, regulators, turbines, power plants, tests. *Three recitation credits, second term. Required of all Juniors in Engineering.*

XVII a. Gas Engines.—Internal combustion motors for gas, gasoline, alcohol, and oils; gas producers, ignition, and governors. *Five recitation credits, eight weeks, first term. Required of Juniors in Mechanical and Highway Engineering.*

XVIII. Strength of Materials.—Text-book study of the theory of the strength of rods, pipes, cylinders, beams, columns, shafts, and simple framed structures. Laboratory tests of wood, iron, steel, alloys, brick, stone, and cements. *Three recitation and one laboratory credits, first term. Required of Seniors in Mechanical, Highway, and Chemical Engineering.*

XIX. Applied Mechanics.—The mechanics of bodies at rest and in motion. Friction of rest and of motion. Energy, work, and power. Elements of graphic statics. Illustrations are made by the use of many common problems from engineering practice. *Five recitation credits, twelve weeks, second term. Required of all Juniors in Engineering.*

XX. Mechanism.—Analysis of motions in machines. Practical mechanism of gears, cams, bearings, shafting, pulleys, belts, ropes, and chain drives. *Five recitation credits, eight weeks, first term. Required of Juniors in Mechanical and Highway Engineering.*

XXI. Hydraulics.—Flow of water through pipes and orifices, and over weirs. Discharge of sewers, rivers, and streams. Water wheels and water power. *Five recitation credits, six weeks, second term. Required of all Juniors in Engineering.*

XXII. Heating and Ventilation.—General principles of heating by means of steam, hot air, and hot water. Computations of heating surface. Heating systems for shops and mills. *Five recitation credits, two weeks, first term. Required of Juniors in Mechanical and Highway Engineering.*

XXIII. Mill Construction.—Lectures upon the structural development of industrial buildings. The subjects of foundations, walls, floors, roofs, lighting, fire protection, and sanitary features are taken up and thoroughly discussed. *Five recitation credits, six weeks, second term. Required of Seniors in Mechanical Engineering.*

XXIII a. Mill Equipment.—Lectures treating of the general equipment of a manufacturing plant with the necessary power and power transmission machinery, repair shops, and machine tools. A course can be given, if required, pertaining to the installing of textile machinery. *Five recitation credits, six weeks, second term. Required of Seniors in Mechanical Engineering.*

XXIV. Contracts, Specifications and Business Law.—Lectures intended to



present the subject as an aid to the constructive engineer. *Five recitation credits, two weeks, second term. Required of Seniors in Mechanical and Highway Engineering.*

XXV. Industrial Economics.—Management of shops, draughting-room methods, tool-room systems, card records for time keeping, stock, and cost of manufacturing, advertising and sales department. *Five recitation credits, four weeks, second term, Required of Seniors in Mechanical Engineering.*

XXVI. Engineering Tests.—Practical testing of engines, boilers, pumps, machinery, fuels, and materials used in engineering work. *One recitation and two laboratory credits, first term. Required of Seniors in Mechanical Engineering.*

A. Drawing.—Freehand sketching of machine parts, projections, lettering, use of instruments, geometrical problems, machine-drawing tracing, and blue printing. *Three laboratory credits per week throughout the year. Required of Short-Course students in Engineering, first year. One laboratory credit per week throughout the year. Required of young men in Sub-Freshman course, first year.*

B. Shop Practice.—The Short-Course Engineering student elects work in carpentering, machine shop, or machine draughting. *Four and one-half shop credits per week, first term; three shop credits per week, second term. Required of Short-Course students in Engineering, first year.*

C. Shop Practice.—Carpentry, machine shop, machine draughting, or steam engineering. The student continues in the same line of work as was chosen the first year, except that those who are to take steam engineering, now substitute it in place of the machine shop. *Four and one-half shop credits per week throughout the year. Required of Short-Course students in Engineering, second year.*

D. Machine Tools.—A study of the types and principles of operations of the machine tools to be found in a machine shop. Text-books, lectures, and reference reading. *Three recitation credits per week throughout the year. Required of Short-Course students in Engineering, first year.*

E. Engineering Theory.—Properties of material, fuel, lubricants, steam engines, boilers, gas engines, mechanism, practical electricity, shop methods. *Five recitation credits per week throughout the year. Required of Short-Course students in Engineering, second year.*

F. Carpentry.—A brief course in use of tools and joinery. *One shop credit per week throughout the year. Required of young men in Sub-Freshman course, second year.*

G. Woodcarving.—*One laboratory credit per week throughout the year. Required of young women in Sub-Freshman course, second year.*

H. Farm Buildings.—A practical course in the planning of farm structures, estimating quantities of material required, and costs. *One shop credit per week, first term; one and one-half shop credits, second term. Required of Short-Course students in Agriculture, first year.*

I. Shopwork.—Woodworking at the bench and lathe. *One and one-half shop*



credits per week throughout the year. Required of Short-Course students in Agriculture, first year.

J. Forging and Machine Shop.—Two and one-half shop credits per week for twenty-four weeks. Required of Short-Course students in Agriculture, second year.

## Geology and Mineralogy.

DR. WHEELER, MR. BIDWELL.

GEOLOGY.—Under this subject historical geology is considered in outline, attention being given, also, to those phases of dynamical and structural geology which are particularly important. Special attention is given to rock weathering and soil formation, and to those characteristics of rocks which are of chief importance in connection with road construction.

DETERMINATIVE MINERALOGY.—A short course dealing with the elements of crystallography is given, together with the physical and chemical characteristics of minerals, especially of the rock-making minerals composing our soils. Laboratory work in blowpipe analysis and physical determination of minerals follows the crystallography.

### Subjects.

I. Geology.—Two recitation credits per week, second term. Required of Juniors in Highway Engineering.

II. Mineralogy.—See Chemistry V.

## History.

MISS COOPER.

### Subjects.

I. Social and Economic History of the United States.—Two recitation credits per week, first term; and three recitation credits per week, second term. Required of Juniors in all courses.

II. Modern European History.—A general survey extending from the close of the fifteenth century to the present day. Two recitation credits per week, first term; and three recitation credits, second term. Required of Juniors in all courses.

I or II will be given, as the class elects.

III. Government and Politics in the United States.—*Three recitation credits per week, first term; and two recitation credits per week, second term. Required of Seniors in all courses.*

A. English History.—*Four recitation credits per week, first term; and two recitation credits, second term. Required of all Sub-Freshmen, first year.*

## Languages.

PROFESSOR WATSON, MISS COOPER, MISS SENTON.

The subjects grouped under this head are English, German, French, and Latin.

In all the college courses leading to a degree, four years of English and two years of foreign language study are required.

The aim of the department must necessarily vary with the language taught. In English, the student is expected to gain increased facility in the correct use of his mother tongue as well as a large acquaintance with its best literature. In French and German, while practice in speaking and writing is constant, special emphasis is put upon a study of some of the literary masterpieces; and incidentally a good foundation is laid for the easy reading of scientific texts. The required year's work in Latin is looked upon as furnishing a valuable preparation for later language study and as being helpful in understanding scientific terms.

The library is a most important factor in the work of the department, as the English language and literature are represented in it by over one thousand carefully selected volumes, and the French and German literatures by about six hundred.

## Subjects.

### ENGLISH.

I. Rhetoric.—Text-book study and practical application of rhetorical principles in exercises and themes. *Two recitation credits per week throughout the year. Required of Freshmen in all courses.*

II. Critical study of certain prose masterpieces by Carlyle, Emerson, Lamb, Holmes, Thoreau, Burroughs, and Warner; with essays and various short papers. *Two recitation credits per week throughout the year. Required of Sophomores in all courses.*

III. Argumentation.—Essays, orations, and debates required. *Three recitation credits per week, first term. Required of Juniors in all courses.*

IV. American Literature.—General study of the subject. Essays required. *Two recitation credits per week, second term. Required of Juniors in all courses.*

V. General English Literature.—Largely a study of Chaucer, Shakespeare, Milton, Wordsworth, Tennyson, Browning, and their times. Essays and collateral reading required. *Three recitation credits per week, first term; two recitation credits per week, second term. Required of Seniors in all courses.*

VI. Special English Literature.—Study of special periods and authors. *Three recitation credits per week, first or second term. Elective; open to students who have taken courses I–V or their equivalent.*

A. Elementary English.—Grammar, dictation, composition, and reading of masterpieces. Constant practice in writing and oral expression. *Four recitation credits throughout the year. Required of Short-Course students in Agriculture and Engineering, first year.*

B. Elementary English.—A continuation of A, including, also, some instruction in civics and economics. *Three recitation credits throughout the year. Required of Short-Course students in Agriculture and Engineering, second year.*

C. College Entrance Requirements in English.—With composition work. *Five recitation credits per week throughout the year. Required of Sub-Freshmen, first year.*

D. Continuation of C.—*Three recitation credits per week throughout the year. Required of Sub-Freshmen, second year.*

## MODERN LANGUAGES.

### GERMAN.

I. Elementary German.—Grammar, dictation, conversation, reading of easy prose and poetry. *Four recitation credits per week throughout the year. Required of Freshmen in all courses who do not take French.*

II. Reading of intermediate texts, composition, conversation, study of one of Schiller's masterpieces or similar work.—*Three recitation credits per week throughout the year. Open to students who have taken I or its equivalent and required of Sophomores in all courses who do not take French.*

III. German Classics.—Goethe, Schiller, Lessing. *Three recitation credits per week throughout year. Elective; open to students who have taken I and II or their equivalent.*

IV. German Prose.—Freytag, Von Scheffel, Dahn. *Three recitation credits per week throughout the year. Elective; open to students who have taken I–III or their equivalent.*

V. Scientific German.—Intermediate reading in connection with II, or special work assigned by different professors.

## FRENCH.

VI. Elementary French.—Grammar, dictation, conversation, reading of easy prose and poetry. *Four recitation credits per week throughout the year. Required of all Freshmen not taking German or Latin and not offering French for entrance.*

VII. Reading of intermediate texts, composition, conversation.—*Three recitation credits per week throughout the year. Open to students who have taken VI or its equivalent and required of Sophomores in all courses who do not take German.*

VIII. French Classics.—Corneille, Racine, Molière. *Three recitation credits per week throughout the year. Elective; open to students who have taken VI and VII.*

IX. French Prose.—Hugo, Sand, Balzac, Loti. *Three recitation credits per week throughout the year. Elective; open to students who have taken VI–VIII or their equivalent.*

X. Scientific French.—Intermediate reading in connection with VII, or special work assigned by different professors.

## LATIN.

I. Cæsar or selections from various Latin authors.—*Three recitation credits throughout the year. Elective.*

A. Elementary Latin.—*Five recitation credits throughout the year. Required of Sub-Freshmen, second year.*

## Mathematics.

PROFESSOR TYLER, PROFESSOR BLACK, MR. FIELD.

The work in this department covers three distinct phases of mathematical training: the College, the Sub-Freshman and the Short-Course instruction. Throughout the regular college work, emphasis is laid both on the theory and direct application of the different subjects to problems that arise in agriculture and the various branches of engineering. It is the aim to prepare the Sub-Freshmen as thoroughly for college mathematics as is done in the better high schools of the state. An attempt is made to present a working knowledge of algebra, geometry, trigonometry and their practical use to Short-Course students without requiring them to prove the principles involved.

## Subjects.

I. Algebra.—Review work; higher algebra, including logarithms. *Three recitation credits per week, first term. Required of Freshmen in Agriculture.*

II. Plane Trigonometry.—Theory and application. *Three recitation credits per week, second term. Required of Freshmen in Agriculture.*

III. Higher Algebra and Solid Geometry.—*Five recitation credits per week, first term. Required of Freshmen in Engineering, Applied Science, and Home Economics.*

IV. Plane Trigonometry and Analytics.—*Five recitation credits per week, second term. Required of Freshmen in Engineering, Applied Science, and Home Economics.*

V. Analytics and Calculus.—*Five recitation credits per week, first term. Required of Sophomores in Engineering.*

VI. Calculus (completed).—*Five recitation credits per week, second term. Required of Sophomores in Engineering.*

VII. Differential Equations.—*Two recitation credits per week, first term. Required of Juniors in Electrical Engineering.*

A. Algebra.—To quadratics. *Five recitation credits per week throughout the year. Required of Sub-Freshmen, first year. An additional one-half laboratory credit during the first term.*

B. Algebra.—Quadratic equations, theory of quadratic equations, inequalities, ratio and proportion and the progressions. *Three recitation credits per week throughout the year. Required of Sub-Freshmen, second year.*

C. Algebra.—Elementary work planned to meet the needs of Short-Course students. *Four recitation credits per week, first term. Required of students in the Short Courses in Agriculture and Engineering, first year.*

D. Geometry, Mensuration.—*Four recitation credits per week, second term. Required of students in Short Courses in Agriculture and Engineering, first year.*

E. Plane Geometry.—*Four recitation credits per week, throughout the year. Required of Sub-Freshmen, second year.*

F. Plane Trigonometry, Applied Mathematics, Elementary Surveying, and Drainage.—*Four recitation credits throughout the year. Required in Short Courses in Agriculture and Engineering, second year.*

## Military Science and Tactics.

MAJOR BLACK.

All male students are required to attend exercises in military instruction for four years, or such portion thereof as they are in college, unless excused by reason of physical disability. Credit is



given for this work on the same basis and under the same regulations as in other departments.

The war department furnishes for use in this instruction cadet rifles, equipments, sabres, ordnance; and details an officer of the army to act as instructor when the number of cadets is one hundred or more. The cadets are organized this year into a battalion of two companies of infantry. Theoretical instruction is given by means of lectures and recitations and practical instruction by means of infantry drills in the school of the squad, the company, and the battalion. The aim of these military exercises is to improve the physique, to inculcate the habit of prompt and cheerful obedience and courtesy to rightfully constituted authority, and to exercise an elevating influence on the conduct of the corps of cadets.

Competitive drills are held annually between the companies of the battalion. The name of the best drilled company and its commander is placed on the battalion colors. Company A commanded by Cadet Captain C. L. Coggins, was the winner in the annual color contest, held May 9, 1906.

### Subjects.

Practical Instruction.—Drills in the school of the squad, of the company, and of the battalion. *Two exercises of one hour each per week, counting as one credit, throughout the year. Required of all the command.*

Theoretical Instruction.—A study of the U. S. Infantry Drill Regulations. *One recitation credit per week throughout the year. Required of all Freshmen.*

### Battalion Organization, April, 1907.

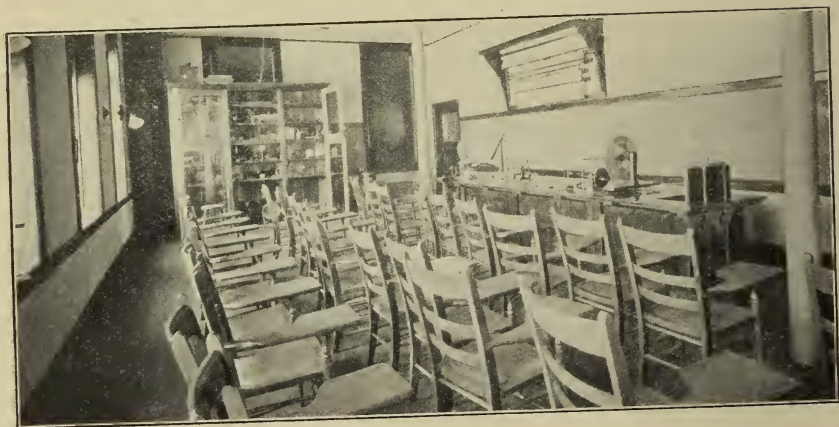
#### COMMANDANT

FINGAL C. BLACK, formerly First Lieutenant, 3d U. S. V. Engineers.

#### CADET OFFICERS.

H. R. LEWIS.....	Major.
C. H. FIELD.....	Captain.
L. A. WHIPPLE.....	Captain
T. C. BROWN, JR.....	First Lieutenant and Adjutant
H. A. FISKE.....	First Lieutenant and Quartermaster.
E. A. GORY.....	First Lieutenant.
C. W. MITCHELL.....	First Lieutenant.
H. W. GARDINER.....	Second Lieutenant.
LEWIS SLACK.....	Second Lieutenant.





PHYSICAL AND ELECTRICAL LABORATORIES.

## CADET NON-COMMISSIONED OFFICERS.

J. M. CRAIG.....	Sergeant-Major.
R. F. GARDINER.....	Quartermaster-Sergeant.
E. F. SMITH.....	First Sergeant.
S. QUINN.....	First Sergeant.
G. J. SCHAEFFER.....	Sergeant.
E. R. BUTTS.....	Sergeant.
R. W. GOODALE.....	Sergeant.
H. F. FRENCH.....	Sergeant.
A. M. HOWE.....	Corporal.
W. G. TAYLOR.....	Corporal.
C. B. EDWARDS.....	Corporal.
J. W. SALISBURY.....	Corporal.
H. R. TISDALE.....	Corporal.
E. F. CATON.....	Corporal.
L. E. MOYER.....	Corporal.
D. E. WARNER.....	Corporal.

## Physics.

PROFESSOR TOLMAN, MR. W. S. RODMAN.

The instruction given in this department is intended to acquaint the students with the fundamental concepts of physical science. The work will be as broad as is consistent with the time and needs of the students.

The department is supplied with apparatus for exact measurements in mechanics, heat, sound, light, electricity, and magnetism.

## Subjects.

I. Descriptive Physics.—A course designed for students in Agriculture. Considerable time is given to the discussion of the principles of mechanics as applied to farm machinery. The course furnishes an excellent foundation for further work in agricultural physics. *Five recitation credits per week, second term. Required of Sophomores in Agriculture.*

II. General Physics.—A mathematical treatment of the subject. *Four recitation credits per week throughout the year. Required of all Sophomores in Engineering and Teachers' Course in Applied Science.*

III. Laboratory Physics.—A course in physical measurements intended to give students methods and to form a basis for future engineering work. The calculation of results will be given special attention. *One and one-half laboratory credits per week throughout the year. Required of Sophomores in Engineering and Teachers' Course in Applied Science.*

IV. Electrical Measurements.—A course of lectures treating of the theory and manipulation of electrical measuring instruments. A discussion of results; errors—their reduction or elimination. *Two recitation credits per week, first term. Required of Juniors in Electrical Engineering.*

V. Electrical Measurements Laboratory.—Direct currents measurements, resistance, potential, current, magnetic properties of iron and steel, calibration of direct current instruments. *Three laboratory credits per week for twelve weeks, first term. Required of Juniors in Electrical Engineering.*

VI. Electrical Measurements Laboratory.—Alternating currents measurements, self-induction, mutual-induction, capacity. Calibration of alternating current instruments. *Three laboratory credits for six weeks, first term. Required of Seniors in Electrical Engineering.*

A. Elementary Physics.—A descriptive course covering the subjects, mechanics of liquids and gases. *Two recitation and one laboratory credits per week, second term. Required of Sub-Freshmen and Short-Course students in Engineering, first year.*

B. Elementary Physics.—A descriptive course in continuation of Physics I, completing an elementary course in the subject. *Two recitation and one-half laboratory credits per week throughout the year. Required of Sub-Freshmen and Short-Course students in Engineering, second year.*

## Psychology.

PRESIDENT EDWARDS.

I. Elementary Course.—Lectures, recitations, simple laboratory experiments. *Given alternate years; next given in 1908. Elective for Juniors and Seniors.*

## Stenography and Typewriting.

MISS TOLMAN.

Stenography and typewriting are offered as electives. A thorough knowledge of the common English branches is required of every one taking the subjects. The Chandler system of stenography and either the touch or sight system of typewriting are taught. Absolute accuracy is required from the first in both subjects, and particular attention is paid to spelling and punctuation.

### Subjects.

I. Elementary.—Instruction in principles; dictation. *Four recitation credits per week throughout the year. Elective.*







THE BIOLOGICAL LABORATORY.

II. Advanced.—Dictation, including the following: business letters, legal documents, terms used, deeds, wills, mortgages, contracts, declarations; hints useful in office work; general dictation. *Three recitation credits per week throughout the year.*

## Zoölogy.

PROFESSOR BARLOW.

The work in this department is designed to meet the needs of two classes of students, those who are interested in the economic aspect of animal life and those who purpose to become teachers of biology. To meet the needs of the first class, subjects are given which are planned to call attention to the economic importance of the different orders. Much time is allotted to entomology, and in this subject special attention is given to injurious species. For those who are to be teachers, a thorough training is given in the morphology and classification of animals as a preparation for the more special subjects that follow. In these attention is directed to the habits and relations of animals, which are studied both in the field and laboratory.

The laboratory is equipped with a series of charts, valuable models and many mounted skeletons. The Rhode Island birds are represented by mounted specimens of practically every species; fishes, reptiles, and batrachians, by alcoholic preparations. The collection of insects, begun recently, now fills about eighty cases, and is being steadily increased. Each student is given the use of compound and dissecting microscopes and necessary instruments for laboratory work.

### Subjects.

I. General Zoölogy.—A study of representative forms of the more important phyla. *Two laboratory credits and one recitation credit per week, first term. Required of Sophomores in Agriculture.*

II. Animal Biology.—The relations of animals to their surroundings is the central idea of this course. *Two laboratory or field credits, and one recitation credit per week throughout the year. Required of Sophomores in Applied Science.*

III. Physiology.—The physiology of the higher mammals. *One laboratory credit and three recitation credits per week, second term. Required of Sophomores in Agriculture.*

IV. Economic Entomology.—*One laboratory credit and three recitation credits per week, second term. Required of Juniors in Agriculture.*

V. General Entomology.—*Two laboratory credits and two recitation credits per week throughout the year. Elective.*

VI. Systematic Entomology.—*Three laboratory credits per week throughout the year. Elective for those who are taking, or have taken, Zoölogy V.*

VII. Vertebrate Anatomy.—*Two laboratory credits and one recitation credit per week, first term. Elective.*

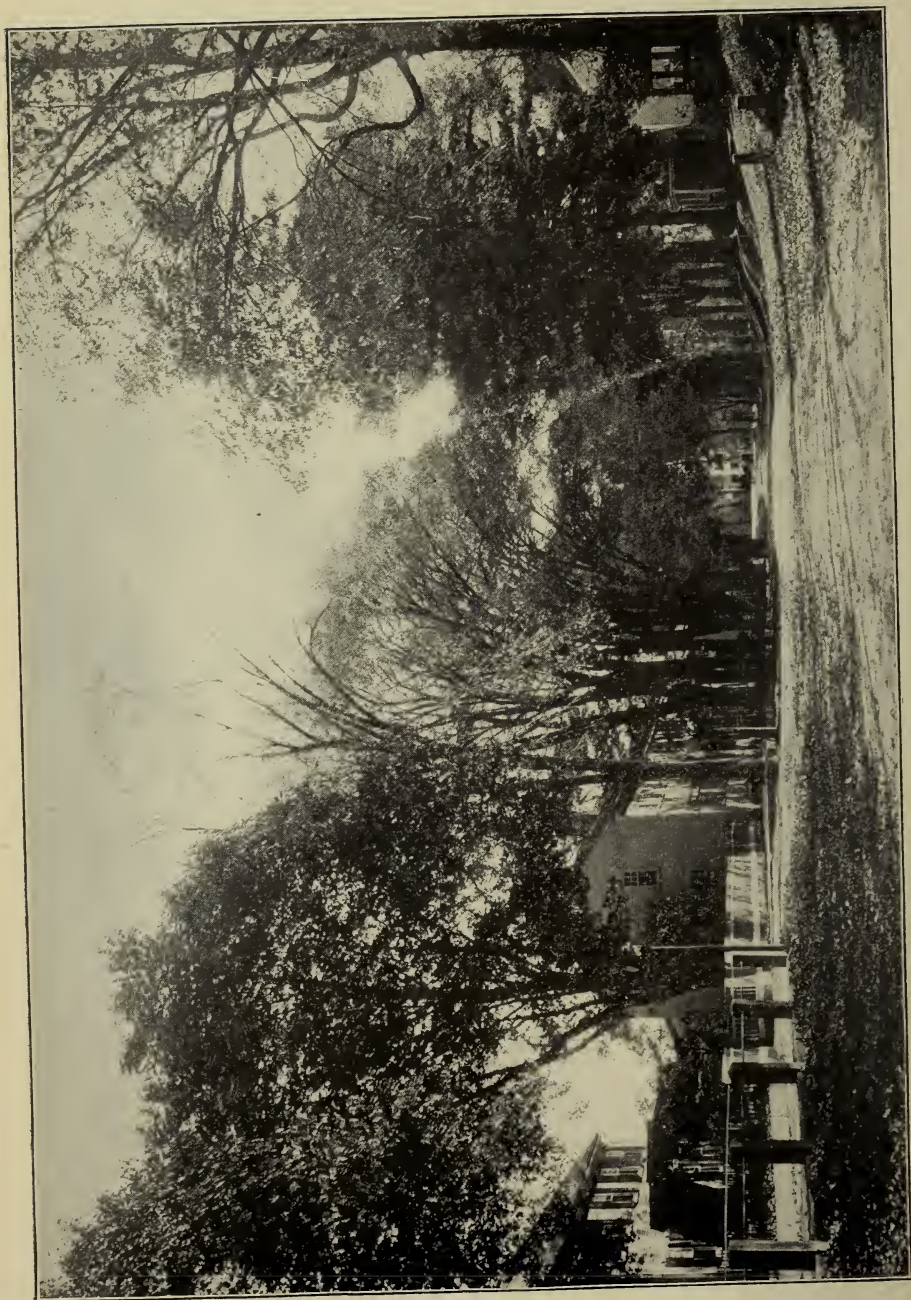
VIII. Histology and Embryology.—*Two laboratory credits and one recitation credit per week, second term. Elective.*

IX. Methods in Nature Study.—*Bird life, habits of insects, aquaria. Two laboratory or field credits and one recitation credit per week, second term. Required of Sophomores in the Teachers' Course in Applied Science.*

A. Elementary Zoölogy.—*Deals with forms of economic importance. Two recitation and two and one-half laboratory credits per week, first term. Required of Short-Course students in Agriculture, first year.*







KINGSTON VILLAGE.

## Organizations.

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### Athletic Association.

JOSEPH DRAKE DREW.....	President.
JAMES MCINTYRE CRAIG.....	Vice-President.
Prof. JOHN BARLOW.....	Secretary-Treasurer.

### Science Club.

Dr. BURT L. HARTWELL.....	Secretary.
Members of the Faculty, Juniors, and Seniors are eligible to membership.	

### Young Men's Christian Association.

CALVIN LESTER COGGINS.....	President.
HARRY ROBERT TISDALE.....	Vice-President.
WALTER JOHN MORAN.....	Secretary.
HARRY REYNOLDS LEWIS.....	Treasurer.

### Young Women's Christian Union.

ETHEL ALDRICH TUCKER.....	President.
MARY ALBRO SHERMAN.....	Vice-President.
RUBY BELLE ROCKWELL.....	Secretary.
ORPHA LILLIE ROSE.....	Treasurer.

### Alumni Association.

HENRY MAXSON BRIGHTMAN, 1900.....	President.
Grand Rapids, Mich.	
GEORGE WASHINGTON BARBER, 1898.....	Vice-President.
Shannock, R. I.	
LILLIAN MABELLE GEORGE, 1899.....	Secretary-Treasurer.
Kingston, R. I.	

#### *Executive Committee.*

H. M. BRIGHTMAN, 1900,	L. M. GEORGE, 1899,
G. W. BARBER, 1898,	EBENEZER PAYNE, 1899,
JEAN GILMAN, 1905.	

## Students.

### Graduates.

Bidwell, George Leslie, B. S. (Tufts, '05), Chemistry	Kingston.
Bosworth, Alfred Willson, B. S. ('99), Chemistry	Geneva, N. Y.
Hammond, H. S., B. S. A. (University Toronto, '06), Chemistry	Kingston.
Rodman, Walter Sheldon, B. S. ('04), Elec. Eng.	Kingston.

### Seniors.

Barber, Arthur Houghton, Mech. Eng.	East Greenwich.
Coggins, Calvin Lester, Elec. Eng.	Sharon, Mass.
Ferry, Jay Russell, High. Eng.	Marion, Conn.
Kellogg, David Raymond, Chem.	New London, Conn.
Kendrick, Winfield Smith, Elec. Eng.	South Chatham, Mass.
Lamond, John Kenyon, Elec. Eng.	Usquepaugh.
Lewis, Harry Reynolds, Agr.	Providence.
Macomber, Miner Sanford, Chem.	Hartford, Conn.
Tucker, Ethel Aldrich, Gen. Sci.	Kingston.

### Juniors.

Drew, Joseph Drake, Chem.	Brockton, Mass.
Field, Clesson Herbert, High. Eng.	Brockton, Mass.
Fiske, Herbert Andrew, Elec. Eng.	Olneyville.
Gardiner, Robert Franklin, Chem.	Wakefield.
Gory, Edward Allen, Elec. Eng.	Pascoag.
Kenyon, Susan Elmora, Biol.	Usquepaugh.
Mitchell, Clovis William, High. Eng.	Harrisville.
Sheldon, George Ware, Elec. Eng.	Wakefield.
Sherman, Mary Albro, Agr.	Lehigh Hill, Portsmouth.
Smith, John Lebroc, Elec. Eng.	Narragansett Pier.
Whipple, Lucius Albert, High. Eng.	Greenville.

### Sophomores.

Cargill, Rhobie Lucelia, Gen. Sci.	Abbott Run.
Caton, Earle Francis, Eng.	Edgewood.
Craig, James McIntyre, Agr.	Riverpoint.
Crandall, Fred Kenyon, Agr.	Westerly.
French, Henry Frank, Eng.	Providence.
Gardiner, Henry Wallace, Eng.	Wakefield.
Howe, Albert Mendel, Eng.	Brockton, Mass.

Knowles, Walter, Eng.	Kingston.
Moran, Walter John, Eng.	New London, Conn.
Moyer, Louis Earl, Eng.	Dexter, N. Y.
Rockwell, Ruby Belle, Chem.	Sylvania, Penn.
Rose, Orpha Lillie, Gen. Sci.	Kingston.
Slack, Lewis, Eng.	Kingston.
Smith, Elmer Francis, Eng.	East Lyme, Conn.
Tisdale, Harry Robert, Chem.	New London, Conn.
Tucker, Ellen Capron, Gen. Sci.	Kingston.

### Freshmen.

Carpenter, Randolph Haywood.	East Providence.
Champlin, Robert Payne.	Block Island.
Cummings, Robert Winthrop.	Orange, Mass.
Denniston, LeRoy P.	Maynard, Mass.
Easterbrooks, Harold Arnold.	Providence.
Edwards, Clarence Bland.	Kingston.
Fairchild, Stanley.	Westport, Conn.
Fitzpatrick, James Thomas.	Carolina.
Flemming, Byron Mason.	Valley Falls.
Flemming, Willard Allan.	Valley Falls.
Goodale, Ralph Waldo.	Leominster, Mass.
Heath, Bertha May.	Lunenburg, Mass.
Henry, Warren.	Hopedale, Mass.
Kenyon, Amos Harris.	Usquepaugh.
Lamond, Helen Scott.	Usquepaugh.
Mott, Elno Carter.	Block Island.
Mounce, Leroy Leidman.	North Marshfield, Mass.
Peabody, George Abbott.	Middleton, Mass.
Ryan, James Daniel.	New London, Conn.
Sherman, John Leland.	Providence.
Smith, Hiram Jameson.	Woonsocket.
Stetson, Clifton Orrison.	Randolph, Mass.
Taylor, Walter Gray.	Middletown.
Tucker, Harriet Taber.	West Kingston.
Wagner, Albert Frederic.	Berkeley.
Worrall, David Elbridge.	Woonsocket.

### Specials.

Browne, Mary Katharine.	Providence.
Chittenden, Leah.	Kingston.
Davis, Augustus Boss.	Kingston.
Dexter, Leon Arthur.	Moosup Valley.
Easterbrooks, Louis Church.	Providence.
Grinnell, Clairmont Livesey.	Middletown.
Lewis, George Mitchell.	Kingston.
Miner, Arthur Jacob.	Rochester, N. Y.



Pitou, Maurice Inslee.....	New York City.
Salisbury, James William.....	Bristol.
Wheeler, Richard Howes.....	New London, N. H.

### Preparatory.

Andrade, Roberto Augusto.....	Ecuador, South America.
Andrews, Carmen Nichols.....	Slocums.
Barker, Stephen Congdon.....	Middletown.
Borba, Eugenio.....	Rio Janeiro, Brazil.
Briggs, Sarah Elsie.....	Kenyon.
Bristle, Fred William.....	Carolina.
Brown, Thomas Clarke, Jr.....	East Greenwich.
Brownell, Ralph Herbert.....	Little Compton.
Bullock, Rhoda Bishop.....	Wakefield.
Butts, Eberhard Raynor.....	East Greenwich.
Collins, Nathan Alfred, Jr.....	Wood River Junction.
Comber, Edward Anthony.....	Narragansett Pier.
Curtice, Kolbe.....	Kingston.
Daniels, Willis Washington.....	Pawtucket.
Drake, Howard Prouty.....	Kingston.
Drummond, Oliver Murray.....	Providence.
Edson, Leon Davis.....	Whitman, Mass.
Fagan, Hugh Jean.....	Peace Dale.
Gifford, Gordon Babcock.....	New York City.
Gilman, M. Elvin.....	Gilman, Me.
Harris, Burton Kenneth.....	Lime Rock.
Harris, Gertrude Alice.....	Lime Rock.
Hincks, Willis Franklin.....	Providence.
Kennedy, William Franklin.....	Wakefield.
Kent, Rachel Evelyn.....	Kingston.
Mitchell, Irving Calvary.....	Harrisville.
Mowry, William Wheatley.....	Woonsocket.
Miller, Wilfred Mason.....	East Greenwich.
Neal, William Thomas.....	Pittsfield, Mass.
Perry, George Elliot.....	Chicago, Ill.
Quinn, Stephen.....	Wakefield.
Rawdon, Herbert Edward Carson.....	Providence.
Rollinson, Florence.....	Wakefield.
Safford, Howard Albert.....	Providence.
Sanford, Thomas Whitridge.....	Adamsville.
Schaeffer, George Joseph.....	Peace Dale.
Sherman, Julia Frances.....	West Kingston.
Southard, Horace.....	Providence.
Stubbs, Paul Thomas.....	Thomaston, Conn.
Swan, William Cannon.....	Newport.
Torres, Antonino.....	Guayaquil, Ecuador.
Townend, Daniel.....	Providence.



Warner, David Edmond, Jr.	Bridgeton.
Wilson, Winfield Tracy.	Wakefield.
Wood, Edith Channing.	Slocums.

### Course in Poultry Keeping.

Beaudry, Leon Edward.	Portland, Ore.
Blackman, Charles August.	Needham, Mass.
Critcherson, William Dana.	Westerly.
Deacon, Meres Stoddard.	Bridgeport, Conn.
Denby, Garfield.	Warren.
Draper, Fred Zenas.	Pawtucket.
Falconer, George Watson.	Milford, N. H.
Fellows, Folger P.	Canandaigua, N. Y.
Hansen, Ivan Dahl.	Fisher's Island, N. Y.
Hopkins, George Leonard.	North Scituate.
Johnson, William Plimpton.	Medfield, Mass.
Jones, Everett Ellsworth.	Peace Dale.
Lawless, William.	Peace Dale.
Mays, William Clarke Stevens.	Edgewood.
Meyer, Jacob John.	McKees Rocks, Penn.
Osgood, Joseph.	North Beverly, Mass.
Sanderson, Robert Alexander.	Stoughton, Mass.
Swan, William Cannon.	Newport.
Watts, Wallace Parker.	Littleton Common, Mass.
Wilson, Earl Stanton.	Hammond, N. Y.
Winn, Wesley Preston.	Windsor, Vt.
Total number of students (none counted twice).	142

## Graduates.\*

1894.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ADAMS, GEORGE EDWARD . . . . Kingston.	Agr.	Associate, Agronomy, R. I. Agr. Experiment Station.
AMMONDS, GEORGE CLARENCE . . . . 5 Boylston Place, Boston, Mass.	Mech.	Railroad Postal Clerk, on N. Y., N. H. & H. R. R.
ARNOLD, CHAPIN TRAFFORD . . . . 52 Wood St., Providence.	Agr.	Electrical Contractor, Office 283 Westminster St., Room 10, Providence.
BURLINGAME, GEORGE WASHINGTON. Sturbridge, Mass.	Agr.	Bookkeeper, American Optical Co., Lonsdale, Mass.
CLARK, HELEN MAY . . . . . B. L., Smith College, 1899. 12 East 70 St., N. Y. City.		Private Secretary.
KNOWLES, JOHN FRANKLIN . . . . Kingston.	Mech.	Assistant Wood-Working Dept., R. I. C. A. & M. A.
MADISON, WARREN BROWN . . . . Intervale, N. H.	Agr.	Farm Superintendent, Stone- hurst Farm.
MATHEWSON, ERNEST HOXSIE . . . . Ph. B., Brown University, 1896. West Appomattox, Va.	Mech.	Tobacco Expert, U. S. Depart- ment of Agriculture.
PECKHAM, REUBEN WALLACE . . . . Melville Station, Newport.	Agr.	Market Gardener.
RATHBUN, WILLIAM SHERMAN . . . . Wakefield.	Agr.	Practicing Veterinary.
RODMAN, GEORGE ALBERT . . . . New Haven, Conn.	Mech.	Division Engineer's Office, N. Y., N. H. & H. R. R. Co.
SARGENT, CHARLES LAWRENCE . . . . Ph. D., University of Pennsylvania, 1900. Newark, New Jersey.	Agr.	Chemist, Murphy Varnish Co.
SLOCUM, SAMUEL WATSON . . . . 130 West Broad St., Westerly.	Agr.	Carpenter.
SPEARS, JOHN BARDEN . . . . . South Scituate, R. F. D.	Agr.	Farmer.

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\*It is earnestly desired that the graduates inform the Alumni Bureau of any permanent change of address.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
SWEET, STEPHEN ADELBERT Slocums.	Agr.	Farmer.
TUCKER, GEORGE MASON Ph. D., Göttingen, 1899. Blodgett, Missouri.	Agr.	Proprietor, Plant-Breeding Farm.
WILBER, ROBERT ARTHUR East Greenwich.	Mech.	Express Agent.

## 1895.

ALBRO, LESTER FRANKLIN Melville Station, Newport.	Agr.	Professional Singer.
BURDICK, HOWLAND Kingston.	Agr.	Farm Superintendent, R. I. C. A. & M. A.
CLARKE, CHARLES SHERMAN Jamestown.	Mech.	Marine Engineer.
ELDRED, MABEL DEWITT Kingston.		Instructor in Drawing, R. I. C. A. & M. A.
HAMMOND, JOHN EDWARD Jamestown.	Agr.	Farmer.
OATLEY, LINCOLN NATHAN Wakefield.	Mech.	Contractor and Builder.
SCOTT, ARTHUR CURTIS Ph. D., Univ. of Wisconsin, 1902. Austin, Texas.	Mech.	Professor of Electrical Engineer- ing, Univ. of Texas.
TEFFT, JESSE COTTRELL Jamestown.	Mech.	Purser, Newport and Jamestown Ferryboat Co.
WINSOR, BYRON EDGAR Coventry.	Mech.	Poultryman.

## 1896.

BROWN, MAY (MRS. CHARLES A. WHITE). Narragansett Pier.		At home.
GREENMAN, ADELAIDE MARIA (MRS. R. WALLACE PECKHAM) Melville Station, Newport.		At home.
KENYON, ALBERT LEWIS 210 Rochambeau Ave., Providence.	Mech.	Printer, Silver Spring Bleach- ing and Dyeing Co.
MOORE, NATHAN LEWIS CASS Oneco, Florida.	Agr.	Fruit-Grower, with Royal Palm Nurseries.
TABOR, EDGAR FRANCIS 69 Doyle Ave., Providence.	Mech.	Calico Printer, Silver Spring Bleaching and Dyeing Co.
*WILLIAMS, JAMES EMERSON	Agr.	

\*Deceased.

## 1897.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CARMICHAEL, WELCOME SANDS Shannock.	Sci.	Bookkeeper, Providence Journal Co., Providence.
CASE, HERBERT EDWARDS BROWN Ph. B., Brown University, 1900. Graduate, Hartford Theological Seminary, 1904.	Mech.	Missionary, Marianas, Island of Guam, U. S. A.
GRINNELL, ARCHIE FRANKLIN 85 Ninth St., Providence.	Mech.	Draughtsman, Brown and Sharpe Mfg. Co.
HANSON, GERTRUDE MAIE Usquepaugh.	Sci.	Teacher.
HONSIE, BESSIE BAILEY (MRS. E. F. RUECKERT) 98 Melrose St., Providence.	Sci.	At home.
KENYON, ALBERT PRENTICE 10 West St., Westerly.	Mech.	Bookkeeper, Maxson & Co., West- erly.
KENYON, CHARLES FRANKLIN Shannock.	Mech.	Asst. Supt., Geneva Woolen Mill, Providence.
LARKIN, JESSIE LOUISE 98 Beach St., Westerly.	Sci.	Stenographer.
MARSLAND, LOUIS HERBERT 2512 North 34th St., Philadelphia, Pa.	Mech.	Assistant Engineer, Phila. Rapid Transit Co.
TEFFT, ELIZA ALICE 16 Rocket St., Westerly.	Sci.	Teacher, East Greenwich.
THOMAS, IRVING Allenton.	Mech.	Designer of Patterns.

## 1898.

ARNOLD, SARAH ESTELLE (MRS. R. O. BROOKS) 191 Franklin St., New York City.	Sci.	At home.
BARBER, GEORGE WASHINGTON East Greenwich.	Agr.	Clerk.
CARGILL, EDNA MARIA (MRS. LESTER H. BROWN) 80 Maynard St., Pawtucket.	Sci.	At home.
CASE, JOHN PETER 26 Courtland St., New York City.	Agr.	With Brown Hoisting Machinery Company.
CLARK, WILLIAM CASE Wakefield.	Sci.	Secretary, Sea-View Electric Rail- road.
CONGDON, HENRY AUGUSTUS Kingston.	Mech.	Farmer.
FLAGG, MARTHA REBECCA Hardwick, Mass.	Sci.	At home.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
HARLEY, WILLIAM FERGUSON . . . 62 Hillside Avenue, Providence.	Agr.	Salesman, with Messrs. Callender, McAuslan & Troup, Providence.
TURNER, HARRIETTE FLORENCE (Mrs. GEO. M. TUCKER) . . . Graduate, Drexel Institute, 1900, Blodgett, Missouri.	Sci.	At home.
WILSON, GRACE ELLEN (Mrs. W. F. HARLEY) . . . 62 Hillside Avenue, Providence.	Sci.	At home.

## 1899.

BOSWORTH, ALFRED WILLSON . . . Geneva, N. Y.	Sci.	Assistant, Research in Dairy Chemistry, N. Y. Agr. Exp. Sta.
BROOKS, RALPH ORDWAY . . . 191 Franklin St., New York City.	Sci.	Director and Chief Chemist, Official Testing Laboratory.
GEORGE, LILLIAN MABELLE . . . A. B., Univ. Ill., 1904. Kingston.	Sci.	Librarian, R. I. C. A. & M. A.
HARVEY, MILDRED WAYNE . . . 42 W. 93d St., New York City.	Sci.	Private Secretary.
KENYON, BLYDON ELLERY . . . Austin, Texas.	Agr.	Instructor in Electrical Engineer- ing, University of Texas.
KNOWLES, CARROLL . . . 127 Hamilton St., Providence.	Mech.	Draughtsman, Brown & Sharpe Mfg. Co.
KNOWLES, HARRY . . . Ph. B., Brown University, 1906. 19 East Park St., Newark, N. J.	Sci.	Reporter, Newark Sunday Call.
LADD, MERRILL AUGUSTUS . . . 304 No. Boulevard, Atlanta, Ga.	Mech.	Commercial Representative for Florida and Georgia, General Electric Co.
MORRISON, CLIFFORD BREWSTER . . . 543 Broad St., Providence.	Sci.	Chemist, City Sewerage Dept.
OWEN, WILLIAM FRAZIER . . . Schenectady, N. Y.	Mech.	Engineering Dept., General Elec- tric Co.
PAYNE, EBENEZER . . . M. D., Univ. Michigan, 1904. Great Barrington, Mass.	Sci.	Physician and Surgeon.
PHILLIPS, WALTER CLARKE . . . Ph. B., Brown University, 1902. A. M., Brown University, 1903. 28 Caswell Hall, Providence.	Mech.	Instructor in English, Brown University.
REYNOLDS, ROBERT SPINK . . . Room 314, Gen. Office Bldg., New Haven, Conn.	Mech.	Asst. Engineer, Bridge Dept. N. Y., N. H. & H. R. R. Co.



NAME AND ADDRESS.	COURSE.	OCCUPATION.
RICE, MINNIE ELIZABETH (Mrs. ROBERT J. SHERMAN) Lafayette.	Sci.	At home.
SHERMAN, ABBIE GERTRUDE (Mrs. BENJAMIN BARTON) 56 Pavilion Ave., Providence.	Sci.	At home.
SHERMAN, GEORGE ALBERT West Kingston.	Mech.	Insurance Agent.
THOMPSON, SALLY RODMAN (Mrs. LEWIS BALCH) Kingston.	Sci.	At home.

## 1900.

BRIGHTMAN, HENRY MAXSON 410 Murray Bldg., Grand Rapids, Mich.	Mech.	Firm of Bending, Bicknell and Brightman, Engineering and Construction.
CROSS, CHARLES CLARK North Tarrytown, N. Y.	Mech.	Head Inspector, Maxwell-Briscoe Motor Co.
ELDRED, JOHN RALEIGH Lincoln Hall, Ithaca, N. Y.	Mech.	Instructor in Civil Engineering, Cornell University.
FISON, GERTRUDE SARAH 784 Prospect Place, Brooklyn, N. Y.	Sci.	Children's Librarian, Brooklyn Public Library, 234 Albany Ave., Brooklyn.
FRY, JOHN JOSEPH A. B., Oberlin, 1904. Glenbrook, Conn.	Mech.	Principal, Darien Public School.
GODDARD, EDITH Campello, Mass.	Sci.	Teacher, High School, Hopedale, Mass.
KENYON, AMOS LANGWORTHY White Plains, N. Y.	Agr.	Dairyman, Gedney Farm.
MUNRO, ARTHUR EARLE Ph. B., Brown University, 1902. 714 Industrial Trust Bldg., Provi- dence.	Sci.	Lawyer.
SOULE, RALPH NELSON East Greenwich.	Sci.	Student, 201 E. St. N. W., Wash- ington, D. C.
STEERE, ANTHONY ENOCH Room No. 67, De Graaf Bldg., Albany, N. Y.	Mech.	Assistant Civil Engineer, Erie Canal.
STILLMAN, LENORA ESTELLE 443 Bleecker St., Brooklyn, N. Y.	Sci.	Teacher.
TUCKER, BERTHA DOUGLASS Swansea Centre, Mass.	Sci.	Dressmaker.
WHEELER, CHARLES NOYES 97 Garden Street, Pawtucket.	Sci.	Clerk, Wm. H. Haskell Manufac- turing Co.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
WILSON, JOSEPH ROBERT Belleville.	Mech.	In Woolen Mills, J. P. Campbell.

## 1901.

BRAYTON, CHARLES ANDREW Fiskeville.	Agr.	Farmer.
BRIGGS, NELLIE ALBERTINE Providence.	Sci.	Stenographer, R. I. Hospital Trust Co.
BURGESS, CHARLES STUART 264 Sayles St., Providence.	Mech.	Draughtsman, Brown & Sharpe Mfg. Co.
CLARNER, LOUIS GEORGE KARL, JR. Arnold's Mills.	Sci.	Farmer.
DAWLEY, EDNA ETHEL Kenyon.	Sci.	Teacher.
DENICO, ARTHUR ALBERTUS Narragansett Pier.	Sci.	Electrician, 209 W. 108th St., N. Y. City.
*JAMES, RUTH HORTENSE (Mrs. HERBERT E. ROUSE)	Sci.	
SHERMAN, ANNA BROWN 122 Fountain St., Providence.	Sci.	Stenographer, with Harness & Saddlery Co., Washington St.
SHERMAN, ELIZABETH AGNES 41 Milk St., Boston, Mass.	Sci.	Stenographer, with Whitehall Portland Cement Co.
SMITH, HOWARD DEXTER A. M., Brown University, 1904. Ph. D., Tufts College, 1906. Beloit, Wisconsin.	Sci.	Instructor in Chemistry, Beloit College.
STEERE, ROENA HOXSIE 98 Fifeild St., Providence.	Sci.	Stenographer, with Anthony & Cowell Co.
WILBY, JOHN Flat River, Missouri.	Sci.	Supply Clerk, Central Lead Co.

## 1902.

CLARKE, LATHAM A. M., Brown University, 1903. Ph. D., Harvard University, 1905. Boylston Hall, Cambridge, Mass.	Chem.	Instructor in Chemistry, Harvard University.
FERRY, OLIVER NEEDHAM 8 Armington Ave., Providence.	Mech.	Head Draughtsman, D. & W. Fuse Co.
MAXSON, RALPH NELSON Ph. D., Yale University, 1905. 522 Rose St., Lexington, Kentucky.	Chem.	Assistant Professor in Chemistry, Kentucky State College.
PITKIN, ROBERT WILLIAM Rockville, Conn., R. F. D. No. 1.	Mech.	Farmer.

## 1903.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
BARBER, KATE GRACE . . . . . Ph. D., Yale University, 1906. 123 Huntington St., New Haven, Conn.	Gen. Sci.	Chemist, Conn. Exp. Station.
CONANT, WALTER AIKEN . . . . . Bonnymeade Farm, Manchester, Me.	Agr.	Sanitary Milk and Cream Co.
GODDARD, WARREN . . . . . 48 Quincy St., Cambridge, Mass.	Mech.	Student, New Church Theological School, Cambridge, Mass.
KEEFER, EDITH CECILIA . . . . . 13 Poplar St., Providence.	Biol.	Teacher of Science, Des Moines High School.
KENT, RAYMOND WARREN . . . . . A. M., Harvard University, 1904. Akron, Ohio.	Chem.	Chemist, Diamond Rubber Co.
TEFFT, ERNEST ALLEN . . . . . Broadway, Providence.	El. Eng.	Electrician.

## 1904.

BALLOU, WILLARD ALGER . . . . . Wellsville, Ohio.	Biol.	Asst. Principal, High School.
QUINN, MARY LOUISE . . . . . Mason City, Iowa.	Biol.	Teacher of Natural Sciences, High School.
RODMAN, WALTER SHELDON . . . . . Kingston.	El. Eng.	Instructor in Physics and Electrical Engineering, R. I. C. A. & M. A.

## 1905.

CHAMPLIN, SARAH ELIZABETH . . . . . 30 Cherry St., Providence.	Gen. Sci.	In Office of the Burt Mfg. Co., 226 Eddy St.
DOW, VICTOR WELLS . . . . . 2001 G St., Washington, D. C.	High. Eng.	Junior Asst. Engineer, Office of Good Roads Department of Agriculture.
GILMAN, JEAN . . . . . Hampton, Virginia.	High. Eng.	Assistant to Director of Trade School, Hampton Institute.
HARRALL, NELLIE ARMSTRONG . . . . . Wakefield.	Gen. Sci.	At home.

## 1906.

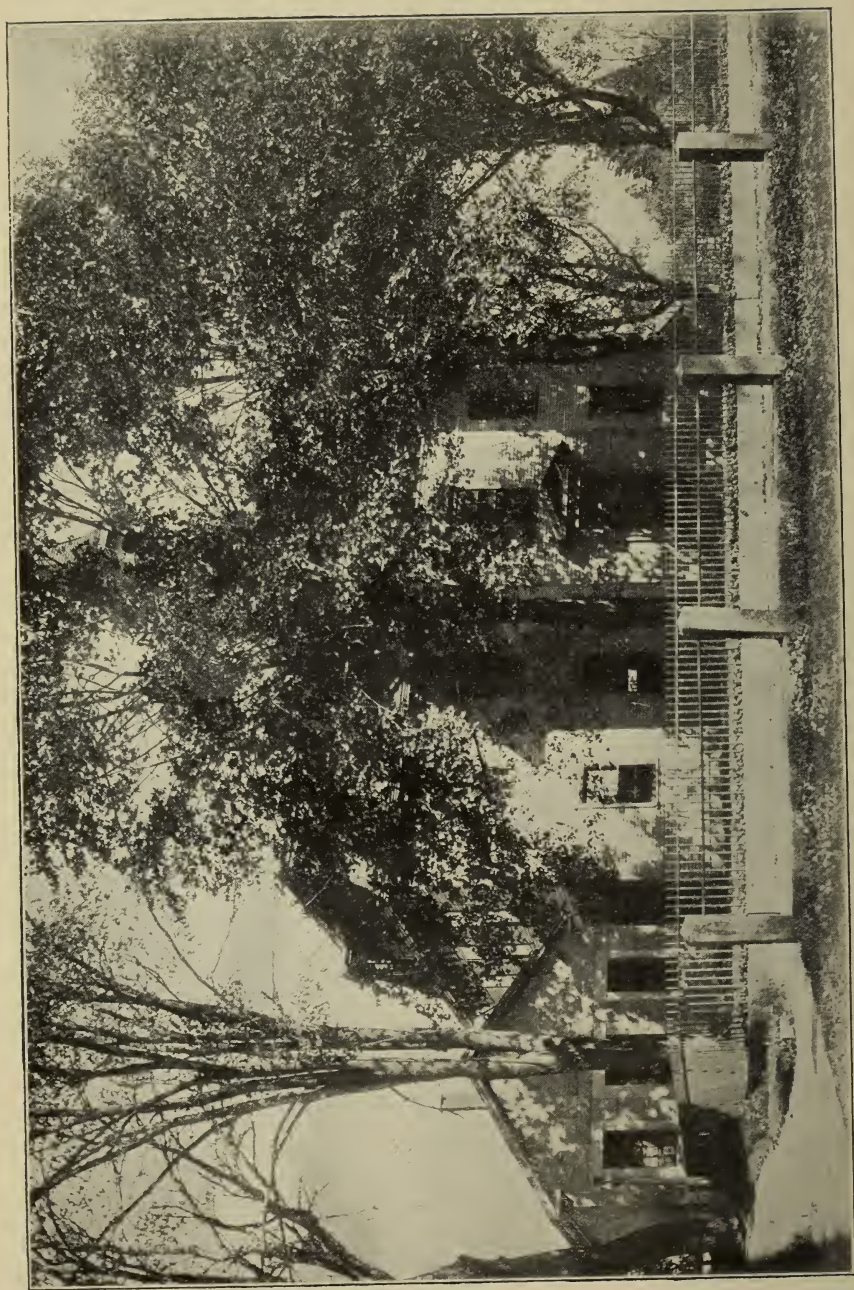
ARNOLD, BENJAMIN HOWARD . . . . . Boston, Mass.	El. Eng.	Graduate Student, Massachusetts Institute of Technology.
BERRY, WALLACE NOYES . . . . . Detroit, Michigan.	El. Eng.	Teacher, Electrical Engineering, Y. M. C. A. Institute.
ELKINS, MARION GRAHAM . . . . . 10 Moody St., Amesbury, Mass.	Gen. Sci.	At home.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
HARDING, LEE LAPLACE. 58 Georgiana St., New London, Conn.	High. Eng.	Instructor in Mathematics and Science, Manual Training and Industrial School.
KEYES, FREDERICK GEORGE Brown University, Providence.	Chem.	Graduate Student, Brown Univ.
NICHOLS, HOWARD MARTIN 10 Anoka Place, Lynn, Mass.	El. Eng.	In Testing Dept., General Elec- tric Co.
SISSON, CORA EDNA Wickford.	Gen. Sci.	Teacher.
WILKINSON, ALBERT EDMUND Woodbine, New Jersey.	Agr.	Horticulturist, Baron de Hirsch Agricultural School.









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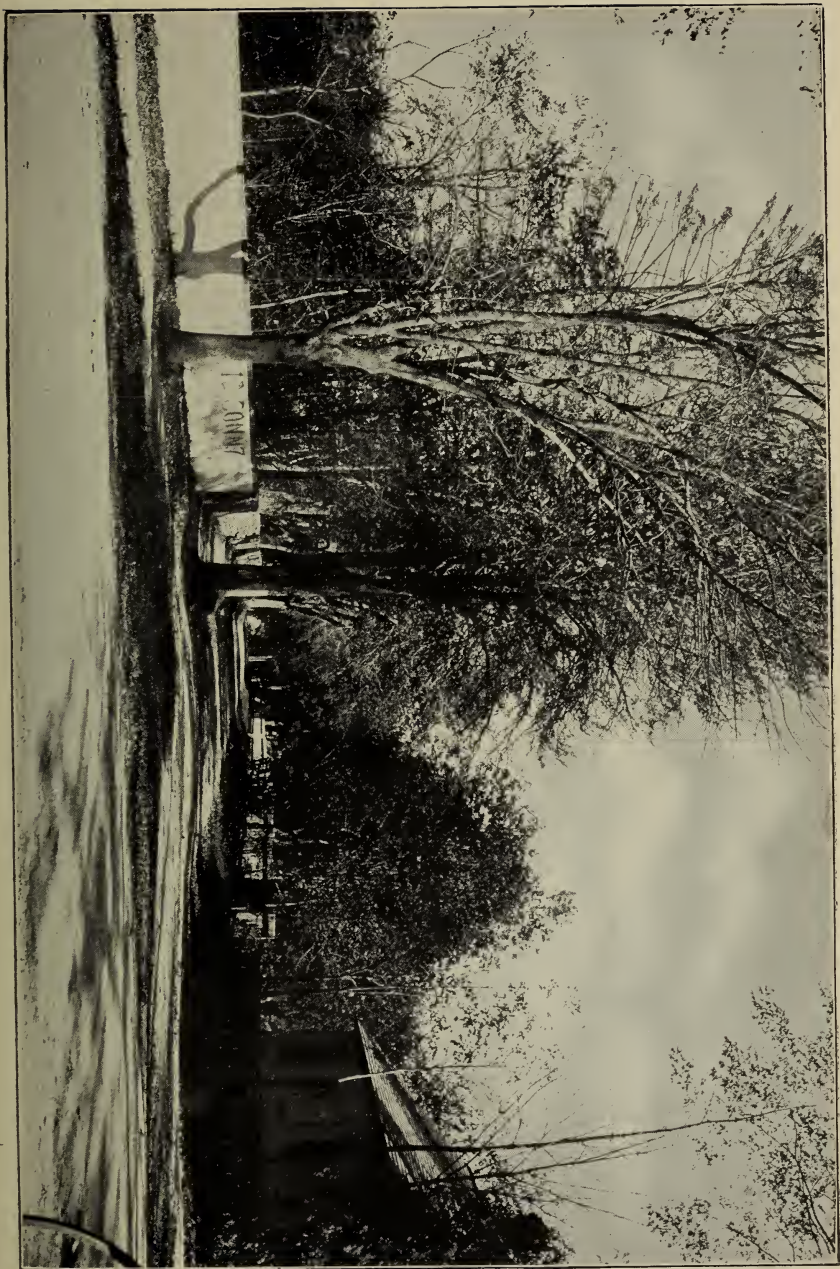
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THE NORTH ROAD.











BULLETIN OF THE RHODE ISLAND COLLEGE  
OF AGRICULTURE AND MECHANIC ARTS.

IV. NO. 1.

FOR MAY, 1908.

CATALOGUE OF THE COLLEGE.



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REPORT OF BOARD OF MANAGERS--PART III.

KINGSTON, R. I.

1908.

PUBLISHED QUARTERLY BY THE COLLEGE

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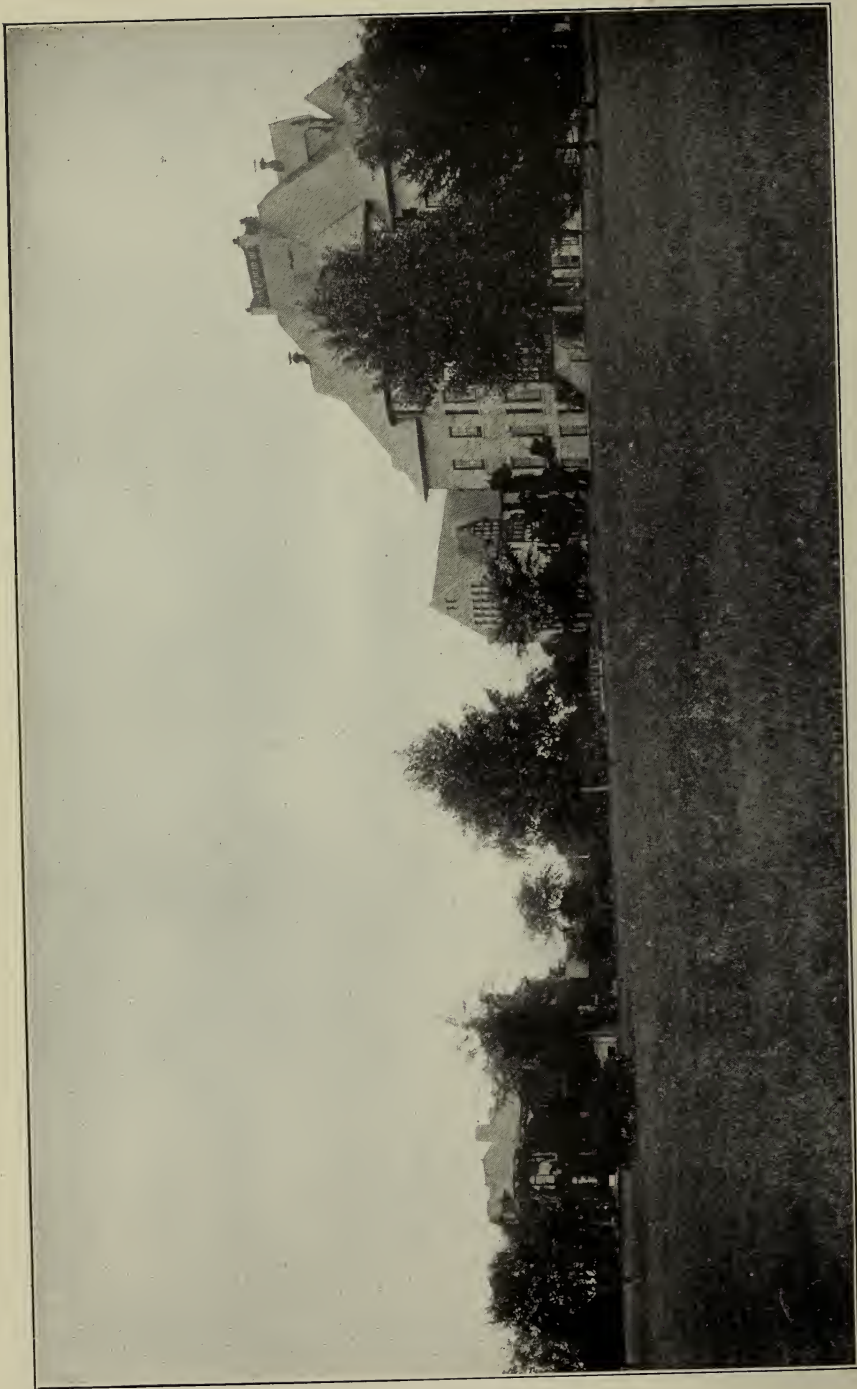
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EXPERIMENT STATION,

LIPPITT HALL,

DAVIS HALL,

# TWENTIETH ANNUAL REPORT

OF THE

Corporation, Board of Managers

OF THE

## Rhode Island College of Agriculture and Mechanic Arts,

MADE TO THE

General Assembly at its January Session, 1908.

---

### PART III—CATALOGUE.

Part I—General Report—is printed under separate cover.

Part II—Experiment Station Report—is printed under separate cover.

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Providence, R. I.

E. L. Freeman Company, State Printers.

1908.



# Rhode Island College of Agriculture and Mechanic Arts.

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## Corporation.

HON. ROBERT S. BURLINGAME.....	NEWPORT COUNTY.
HON. C. H. COGGESHALL.....	BRISTOL COUNTY.
HON. CHARLES DEAN KIMBALL.....	PROVIDENCE COUNTY.
HON. THOMAS G. MATHEWSON.....	KENT COUNTY.
HON. J. V. B. WATSON.....	WASHINGTON COUNTY.

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HON. C. H. COGGESHALL, Clerk.....	P. O., BRISTOL, R. I.
HON. C. H. COGGESHALL, Treasurer.....	P. O., BRISTOL, R. I.



# Report.

---

*To His Excellency James H. Higgins, Governor, and the Honorable  
General Assembly of the State of Rhode Island and Providence  
Plantations, at its January Session, 1908:*

I have the honor to submit herewith Part Three of the Twentieth Annual Report of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, as required by law.

CHARLES DEAN KIMBALL,

*President of the Board of Managers of the Rhode Island  
College of Agriculture and Mechanic Arts.*

## Faculty and Other Officers.

---

HOWARD EDWARDS, A. M., LL. D.,

PRESIDENT,

*Professor of Political Economy and Social Science.*

HOMER JAY WHEELER, PH. D.,

*Professor of Geology and Agricultural Chemistry.*

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*Professor of Physics and Electrical Engineering.*

MARSHALL HENRY TYLER, B. S.,

*Professor of Mathematics.*

GEORGE EDWARD ADAMS, B. S.,

*Professor of Agriculture.*

---

\* Resigned. Resignation to take effect September 1.

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*Professor of Civil Engineering.*

WARREN BROWN MADISON, B. S.,

*Professor of Animal Husbandry.*

HELEN LOUISE JOHNSON, B. S.,

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*Instructor in Military Science and Tactics.*

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HAROLD FREDERICK HUNTLEY, B. S.,

*Instructor in Chemistry.*

DANIEL JOSEPH LAMBERT,

*Instructor in Poultry Keeping.*

ERNEST K. THOMAS,

*Instructor in Horticulture.*

EMILE ARTHUR MALLETTE,

*Florist.*

LUCY COMINS TUCKER,

*Head Clerk and Secretary to the President.*

JENNIE ELIZABETH FRANCIS,

*Bookkeeper.*

## Lecturers.

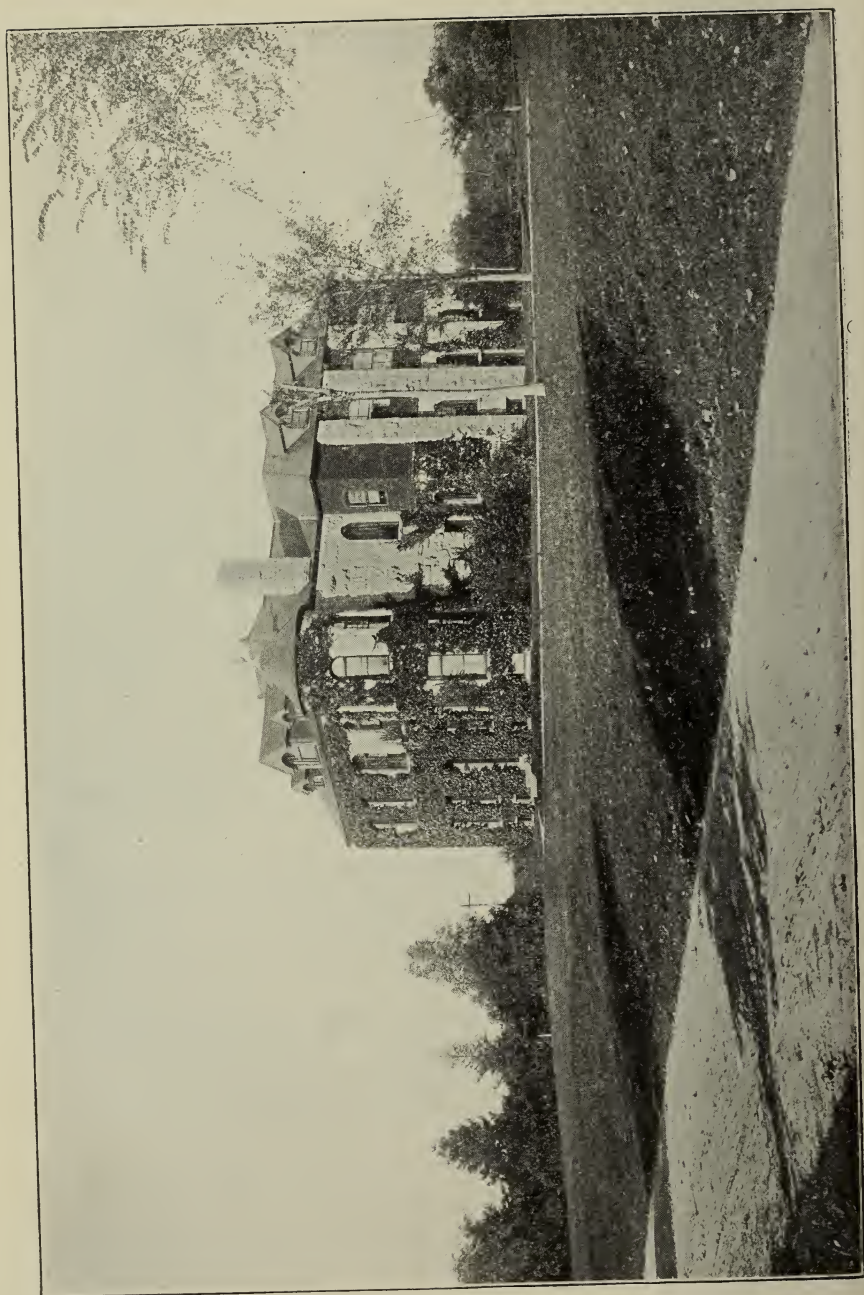
### Poultry Course, 1908.

---

- A. F. Hunter, Abington, Mass., EGG PRODUCTION AND MARKET POULTRY. Four lectures.
- E. C. Tefft, Wakefield, R. I., POULTRY HOUSES AND POULTRY PLANTS. Two lectures.
- H. D. Smith, Rockland, Mass., THE PRODUCTION OF BROILERS AND SOFT ROASTERS. DEMONSTRATION OF CAPONIZING. Three lectures.
- F. W. C. Almy, Tiverton Four Corners, R. I., THE COLONY SYSTEM OF POULTRY KEEPING. Two lectures.
- Thomas Wright, Scarboro Beach, Me., SQUAB RAISING. Four lectures.
- C. S. Greene, New Brighton, N. Y., POULTRY KEEPING WITH LARGE FLOCKS. ADVERTISING. Two lectures.
- J. Alonzo Jocoy, Wakefield, R. I., BROILERS AND EGG PRODUCTION. Two lectures.
- J. H. Robinson, Boston, Mass., POULTRY BREEDING. One lecture.
- J. E. Rice, Ithaca, N. Y., POULTRY EDUCATION. One lecture.
- C. K. Graham, Storrs, Conn., CAUSES OF FAILURES IN THE POULTRY BUSINESS. Two lectures.
- V. L. Leighton, Kingston, R. I., POULTRY KEEPING. One lecture.
- W. H. Card, Manchester, Conn., STANDARD POULTRY, JUDGING, SCORING. Eight lectures.







## Experiment-Station Council.

---

HOWARD EDWARDS, M. A., LL. D.....	{ President of the College. Ex-officio Member.
H. J. WHEELER, Ph. D.....	Director; Agronomy.
BURT L. HARTWELL,* Ph. D.....	Chemistry.
LEON J. COLE,† Ph. D.....	Animal Breeding and Pathology.
GEORGE E. ADAMS, B. Sc.....	Horticulture; Associate, Agronomy.
W. F. KIRKPATRICK,‡ B. Agr., B. E....	Asst. Animal Breeding and Pathology.
W. F. SCHOPPE, B. Sc.....	Assistant, Animal Feeding.
P. H. WESSELS, B. Sc.....	Assistant, Chemistry.
F. R. PEMBER, B. Sc.....	Assistant, Plant Physiology.
S. C. DAMON, B. Sc.....	Assistant, Agronomy.

---

## Other Members of the Station Staff.

J. FRANK MORGAN, M. A.....	Assistant, Chemistry.
L. F. WHIPPLE.....	Assistant, Chemistry.
WILHELM B. QUANTZ, Ph. D.....	Assistant, Chemistry.
E. A. MALLETT.....	Assistant, Floriculture.
NATHANIEL HELME.....	Meteorology.
GRACE E. HOVEY, B. Sc.....	Stenographer and Accountant.
E. ELIZABETH MEEARS.....	Stenographer and Librarian.

---

*The publications of the station will be mailed free, upon request, to all residents of Rhode Island to whom they are of interest. Suggestions as to how the station can aid the state are gladly received. Visitors are always welcome. Railway station, telegraph, express, and post-office—Kingston, Rhode Island. Long distance telephone, Narragansett Pier Exchange.*

---

\* In charge of experiments in Plant Physiology.

† Expert in the Bureau of Animal Industry, U. S. Department of Agriculture. Engaged in co-operative work between the bureau and station.

‡ Agent, Bureau of Animal Industry, U. S. Department of Agriculture. Engaged in co-operative work between the bureau and the station.

## CALENDAR.

**1908.**

1909.

JUNE.		MAY.		APRIL.		MARCH.		FEB.		JAN.	
S	M	T	W	T	F	S	M	T	W	T	F
5	6	7	8	1	2	3	4	5	6	7	8
12	13	14	15	16	17	18	19	20	21	22	23
19	20	21	22	23	24	25	26	27	28	29	30
26	27	28	29	30	31	1	2	3	4	5	6
2	3	4	5	6	7	8	9	10	11	12	13
9	10	11	12	13	14	15	16	17	18	19	20
16	17	18	19	20	21	22	23	24	25	26	27
23	24	25	26	27	28	29	30	31	1	2	3
8	9	10	11	12	13	14	15	16	17	18	19
15	16	17	18	19	20	21	22	23	24	25	26
22	23	24	25	26	27	28	29	30	31	1	2
29	30	31	1	2	3	4	5	6	7	8	9
5	6	7	8	9	10	11	12	13	14	15	16
12	13	14	15	16	17	18	19	20	21	22	23
19	20	21	22	23	24	25	26	27	28	29	30
26	27	28	29	30	31	1	2	3	4	5	6
3	4	5	6	7	8	9	10	11	12	13	14
10	11	12	13	14	15	16	17	18	19	20	21
17	18	19	20	21	22	23	24	25	26	27	28
24	25	26	27	28	29	30	31	1	2	3	4
31	1	2	3	4	5	6	7	8	9	10	11
14	15	16	17	18	19	20	21	22	23	24	25
21	22	23	24	25	26	27	28	29	30	31	1
28	29	30	31	1	2	3	4	5	6	7	8

## College Calendar.

---

Friday, June 19, 1908.....	Entrance Examinations, 9 A. M.
Tuesday, September 8.....	Chapel Exercises, 8:30 A. M.
Registration, examination of entering and conditioned students, 9 A. M.	
Wednesday, September 9.....	Recitations begin, 8:35 A. M.
Tuesday, November 3.....	Election Day.
Wednesday, November 25, 12 M., }	Thanksgiving Recess.
Tuesday, December 1, 8:15 A. M., }	
Wednesday, December 23, 4:15 P. M., }	Christmas Recess.
Tuesday, January 5, 1909, 8:15 A. M., }	
Friday, January 29.....	First Term closes.
Monday, February 1.....	Entrance Examinations, 9 A. M.
Tuesday, February 2.....	Second Term begins, 8:15 A. M.
Registration, 9 A. M. Recitations begin, 1:30 P. M.	
Sunday, February 14.....	Day of Prayer for Colleges.
Wednesday, April 7, 4:15 P. M., }	Spring Recess.
Wednesday, April 14, 8:15 A. M., }	
Friday, May 14.....	Arbor Day.
Sunday, June 13.....	Baccalaureate Address.
Monday, June 14.....	Class Day Exercises.
Tuesday, June 15.....	Commencement Exercises.
Friday, June 18.....	Entrance Examinations, 9 A. M.





# Rhode Island College of Agriculture and Mechanic Arts.

## Foundation.

The college is one of the so-called land-grant colleges. As such, its object is to "teach such branches of learning as are related to agriculture and the mechanic arts . . . in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." Further than this, it has a well-defined investigative purpose in its experiment station, organized as a department of the college and endowed by the general government.

The resources of the college are as follows:

(1) The interest on \$50,000, which was the net amount received by the state from the sale of its scrip for 120,000 acres of land, granted by the general government in 1862. This fund came to the college in 1894.

(2) The annual appropriation of \$15,000 from the general government, under what is known as the Hatch Act of 1887. This fund is exclusively for experimental purposes.

(3) The annual appropriation of \$25,000 from the general government under the second Morrill Act of 1890. This fund is for teaching the subjects distinctly named and specified in the act, as follows: "to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

(4) The funds coming from the general government to the state under the Adams Act of 1906, yielding \$7,000 in 1906, and increasing each year by \$2,000, until the whole shall amount, in 1910, to \$15,000. This fund is exclusively for experimental purposes.

(5) The funds from the general government under the Nelson Amendment of 1907, amounting on July 1, 1907, to \$5,000, and increasing yearly thereafter by \$5,000 until the whole, in 1911, will

amount to \$25,000. This amendment is simply an extension of the 1890 Morrill grant and carries the same restrictions.

(6) The annual maintenance fund from the state of \$25,000, used for all the purposes for which the funds of the general government can not be used: *e. g.*, for extension work; for executive and administrative work; for heating, lighting and maintenance of buildings; for the teaching of modern languages other than English, of history and civics; for student labor, maintenance of grounds, roads, etc.

The college was founded in 1888 as an agricultural school. In 1892 it was incorporated as a college. The courses of study have been on a college basis since 1892; the requirements for a degree were raised in 1898; and the curriculum was again thoroughly revised during the years 1906-07 and 1907-08. The course in home economics for young women was introduced in 1908.

### Object and Organization.

The function of the Rhode Island College of Agriculture and Mechanic Arts is to aid in fostering the industrial life of the state, at least in so far as pertains to agriculture, manufactures, transportation, and home-making. This it does in three ways: 1. By the investigation and discovery of new truth, more or less directly applicable in the industries. 2. By the direct distribution of industrial information to the people. 3. By the organization and administration of definite courses of instruction designed to fit young men and young women for effective work in the industrial pursuits.

The first of these duties is performed by the

### Experiment Station

for a description of the work of which the reader is referred to the report of the director, constituting Part II of the Report of the Board of Managers for the current year. A statement of its staff organization may be found on page 9 of this catalogue.

The experiment station takes part, also, in the second phase of the college activities, by distributing its bulletins to all that desire and apply for them. In order, however, more fully and directly to bring the college and its work into touch with the people, a

### College Extension Department

has been organized, and is in active operation.

The purpose of this department is to carry the instruction of the college to those who can not come to it for study. Whenever necessary and possible, visits will be made to any part of the state to examine farms, orchards, and gardens; to identify injurious insects or plant diseases, or give instruction in regard to methods of treatment; or to examine soils with a view to suggesting remedies for lack of fertility. General plans for laying out farms and for carrying out the details of any farm operations will be given the fullest consideration. The college is open for consultation at any time in regard to any problem of the farm, garden, or orchard. The fullest correspondence is invited, and conscientious consideration will be given to every letter received.

Whenever possible, arrangements will be made for lectures or demonstrations by members of the college faculty or experimentation staff when called for at any agricultural meeting or neighborhood gathering. Coöperative experiments will be arranged to help the farmer solve the problems which are peculiar to his own farm or his portion of the state, and for the purpose of teaching some of the principles which have been worked out at the experiment stations of this and other states. As part of the work for the present season, such experiments will be outlined along the following lines: 1. Remedies for the San José scale and other injurious insects and plant diseases. 2. Treatment of greenhouse insects with hydrocyanic-acid gas.

From time to time, as funds will permit, special lecturers will be engaged to address granges, horticultural societies, and other organizations interested in agriculture, on various timely topics. Such lectures will generally be given free of charge. Members of the faculty have prepared lectures on various subjects which they are ready to deliver at any place in the state. These lectures are free, the only charge being the traveling expenses of the speaker.

An important part of this extension work is to be the encouragement of home study and the conducting of correspondence courses. For the present, time and funds will not permit the carrying out of this plan, but advice will be given to any person wishing to take up home study regarding courses of reading, books, and other literature which may be necessary in connection with such work.

Another important phase of nature study, which aims to interest the young people of the schools in things of nature and of the farm, is

## The Nature Guard.

The Nature Guard is an organization of young people formed for the purpose of awakening in its members a livelier interest in the things of outdoor life. Its object is to stimulate the power of observation and to lay the foundation for a simple, rational education, which shall give the individual a love for nature and a sympathy with his environment, and furnish him with the means of making life more useful and more enjoyable, whether lived in the country or in the city.

The boys and girls in one school, or in one room, if the school is graded, form themselves into a band and elect officers, which are a spy and a guardian. This band fixes its own time for meeting and adopts its own methods of procedure. Enrollment cards to be signed and returned are furnished from the college. A charter will be sent to each band upon completing enrollment. Each member who sends in an enrollment card will receive an appropriate lapel button indicating that he belongs to the Nature Guard. At the end of the year, a neat certificate will be forwarded to all who have sent in reports during the year.

A printed leaflet is issued monthly during the school year, and a copy is sent to each member of the Nature Guard, and also, on request, to individuals who are interested. The purpose of the leaflet is to furnish a stimulus to nature study by making each month some suggestions bearing on the subject. Monthly reports, giving observations of their own, are requested from the members. Supplemental leaflets for teachers will be issued from time to time, the object of which will be to call attention to the latest views and methods in nature study.

In connection with nature-study work, advice and assistance will be given to schools, to children's organizations, and to individual boys and girls who wish to carry on work with children's gardens. Where a number of gardens are placed together, as in schools or in boys' clubs, the college will send an instructor to teach methods of preparing the ground, planting, cultivating, and harvesting garden crops. Individuals will be given advice by circulars and by correspondence. Application has been made to the Washington County Agricultural Society to grant premiums to children for seed and plant collections, and for exhibits of a few vegetables which can be easily grown, either in school or home gardens.



Further notes in regard to this work are given in leaflets and circulars issued by the Extension Department, and correspondence is solicited from any one who may be interested.

## The College as an Educational Agency.

In its third form of activity, the purpose and work of the Rhode Island College of Agriculture and Mechanic Arts is to give college training and culture to young men and young women, not in spite of, but through and with vocational studies. Its courses are intended, first of all, to make the student a self-supporting unit in society, a positive force for social advancement, able and willing not only to maintain himself, but also to carry something of the common social burdens that always weigh upon the thoroughly efficient worker.

### I. The Four-Year Courses.

To this end certain college courses, intended to fit men and women for efficiency and leadership in well-defined life-activities, have been prepared. These courses are all founded upon training in mathematics, pure and applied; the English language as a means of intercommunication; and the sciences that deal with matter, force, and life as applied more directly to agriculture, the mechanic arts, and home economics. In the pursuit of these vocational studies, the effort is to accumulate an array of knowledge that, in the activities of industrial life, must be always practically serviceable, and, at the same time, to gain a disciplinary training both of brain and of muscle and nerve that makes for practical effectiveness. These courses, moreover, recognizing that a college course should include not only intellectual training and the knowledge and skill requisite for bread-winning, but also preparation for citizenship, for moral and social life, have intertwined with the vocational work and study previously mentioned, the subjects that most directly make for culture and morality—history, economics, literature, languages, ethics, psychology, and sociology. These are ranked as of equal importance with the bread-winning studies.

The college courses just discussed are four years in length, and base themselves directly on the work of the four years of the high schools. They thus become an integral part of the school system of the state. Young men and young women, citizens of the state and having

requisite high-school training, are admitted to these courses without charge for tuition.

The four-year courses thus offered are the agricultural course, the engineering course, the teachers' course in applied science, and the course in home economics.

### THE AGRICULTURAL COURSE.

The agricultural course is intended to give thorough preparation for taking charge of and operating a piece of landed property. Its work is centered around instruction and practice in horticulture, general farming, and animal husbandry (more especially as applied to dairying and the poultry industry). The course consists of practical work combined with thorough study of the sciences bearing directly on such work, viz.: botany, chemistry, geology, zoölogy, anatomy, physics, and entomology. In addition, it embraces the culture and mental discipline arising from the study of mathematics, English composition and rhetoric, history, drawing, modern languages, economics, and English literature. The course is planned to give the student a full and rounded development as worker, as citizen, and as man.

All agricultural students will follow the same work in the first two years; but, at the beginning of the Junior year, with the required work for all students in the course, four optional lines of work are offered, one of which must be selected by the student and followed until graduation. The four lines offered are general farming, horticulture, general animal husbandry, and poultry work. In addition, two science subjects must be elected. No option and no subject will be given for which a number of students sufficient to warrant giving it has not applied. For tabulated course, see pages 34-37.

### THE ENGINEERING COURSE.

The engineering course has the same requirements for entrance, the same duration, and the same general plan as the agricultural course. Students will follow the course as laid down until the beginning of the Junior year, at which time, as with the agricultural course, students must elect one of the four optional lines offered, viz., mechanical, electrical, civil, and chemical engineering. Any line of

work for which the number of applicants is insufficient to warrant giving it, the college reserves the right to withdraw.

The course is arranged to prepare young men for skilled and efficient work in the great manufacturing and commercial industries of the state; in the development of electricity as a motive force and in its thousand-fold other applications to the arts and to the life of society; in the activities of the new road-building era upon which we are entering; and in the applications of chemistry as now found in the great industrial establishments. At the same time, in this as in all other courses, it is not forgotten that the man is not a mere lever in his own machinery, and the effort after breadth and completeness of life is steadily maintained. For tabulated course, see pages 34-37.

### TEACHERS' COURSE IN APPLIED SCIENCE.

This course is intended to prepare persons to teach in industrial schools those branches of applied science that pertain especially to agriculture and the mechanic arts. In such schools it has been found of especial importance that the teachers be trained in an environment of current thought sympathetic with the industrial applications of science and intelligently appreciative of the methods and problems of such work. In response, therefore, to the need, and in accordance with an expressed purpose of the new fund from the United States Government, we have constructed this course. The effort has been to make the course effective for its purpose, while at the same time retaining for it that breadth and that cultural influence that are necessary to fit the whole man or woman for social life and are especially important in persons who, as teachers, will exercise large personal influence over immature youth.

The general plan of the course is the same as that of the other two courses just described. It opens to the student, at the beginning of the Junior year, three options, one of which he must select in conjunction with certain studies required of all. For tabulated course, see pages 34-37.

### THE COURSE IN HOME ECONOMICS.

The aim of modern education is to develop character and efficiency. The efficient person is the one capable of self-support—the productive citizen. For efficiency the individual needs several things. He

must have health of body and mind; the control of materials and forces, which comes only from the knowledge of the things with which he must deal, and a power of separating as well as deducing cause from effect. He must have the ability to do, which involves reasoning power, perseverance and self-control. The recognition of the need for a direct teaching of these things is the basis of the universal democratic education of to-day for industry, agriculture, and the home.

It is now universally accepted that no other education is as important for the average man as the education which will teach him how to earn his own livelihood. Just so it needs to be accepted that no other learning is as important for the average woman as that which will make her efficient for her vocation, which for most women is the administration of household affairs. If in the training for citizenship and in the upbuilding of character, the home is the fundamental factor, it is inevitable that home economics must bear an organic part in the general scheme of education. For it is an understood fact that the welfare of a country is threatened when men and women are not trained and ready for the positions of trust and responsibility which fall to their share. This is the great force behind the onward march of so-called practical education, in which to-day the subjects grouped under the name of home economics bear so important a part.

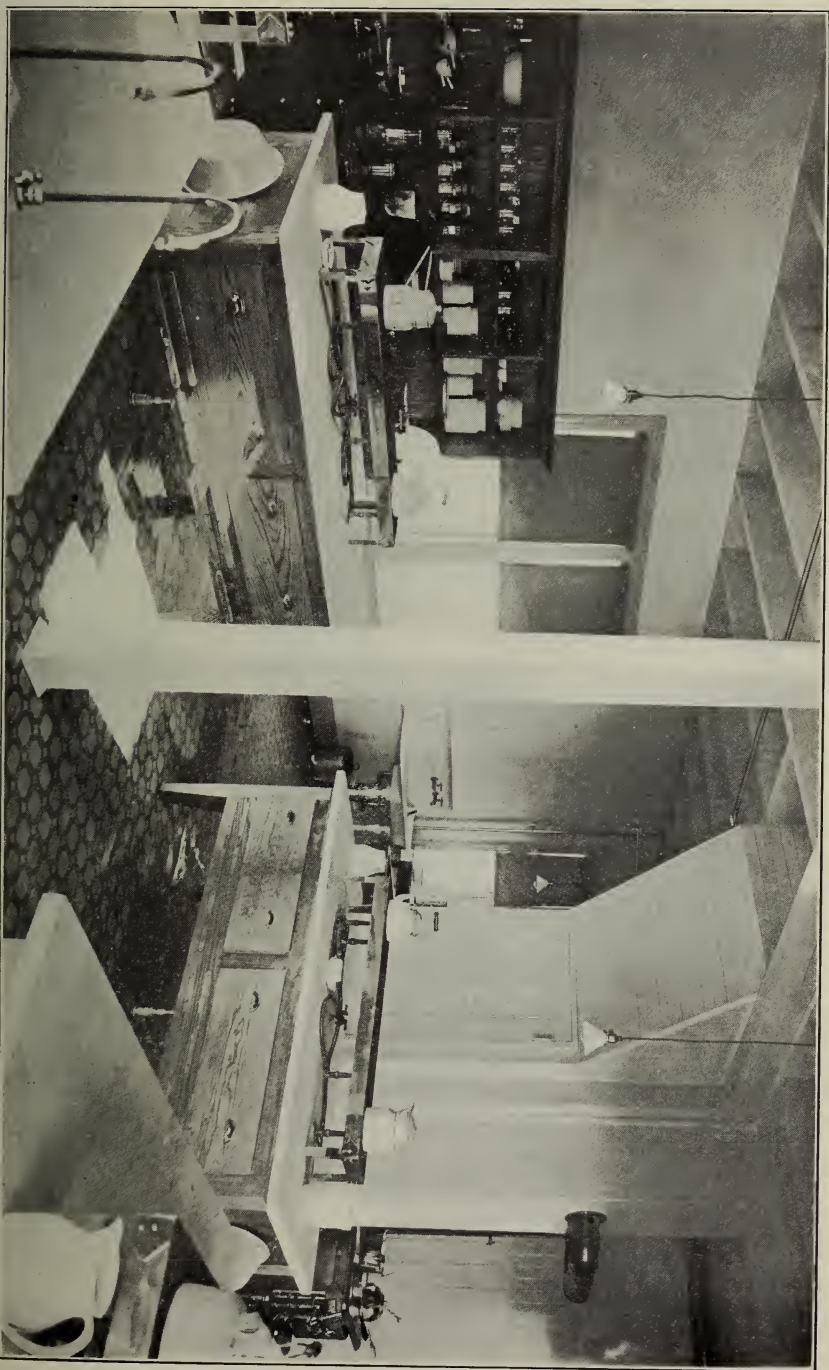
In the various bills presented to Congress in behalf of national aid for such forms of education, these paragraphs appear:

"Our most important and racial institution—the home—can be developed along with other institutions only as we give to it the discoveries of science and build it up through education. It is not enough that America has homes averaging better than homes of other parts of the world; they should be very much better."

"Every city and town should offer opportunity to girls to gain a knowledge of the production and preparation of food and clothing, of lighting, heating, water supply, and sanitation, of household care and decoration, such as would mean a distinctly higher standard for our homes."

"There is the greatest fear that such schools be thought below the standard of our classical schools, and until we dare to take the stand that it is all a question of relative values, and that Latin and mathematics have not as much educational value for certain girls as house-





HOME ECONOMICS LABORATORY.





hold science and art have, these schools will probably not perform the greatest service of which they are capable. When we are wide awake to the fact that the solution of our domestic difficulties is dependent on a greater knowledge of production and its wise direction, perhaps we shall be ready to say that learning to do things and learning to understand the reason for doing things will have as great a cultural value as the study of Homer and solving original problems in geometry."

It is to meet the demands for such practical education that the home economics department has been established here. It is so planned as to give both men and women a general view of the household in society, and to provide such training as will lead to more healthy, happy, intelligent and economical administration of the home as a social unit. It is also designed to aid in fitting such students as desire to enter special fields of domestic activity in institutional and educational lines of work.

The courses of instruction are planned to meet the needs of two classes of students: (a) those who may be specializing in other lines of work but desire a general knowledge of the principles and facts of home economics; (b) those who wish to specialize in the various lines of this work.

The general course is designed to provide an education in those branches that especially serve the needs of women students, and to meet the demands of the day for training in social and sanitary science. Although the main work is scientific and technical, the importance of artistic and literary training for home life has not been neglected. It is recognized that all the knowledge of right living to be gained through all the avenues of learning is needed to assist the student to a broader conception of citizenship as well as in performing the manifold duties of daily life.

The courses include instruction in the planning, sanitation, decoration, and care of the house and its administration on the economic side; the preparation of food from the scientific and economic points of view; the study of nutrition; the discussion of problems of personal and public hygiene and instruction in the care of infants and young children.

The entrance requirements are the same as for the other college courses. Of the one hundred and sixty credits required for graduation, thirty-three are required in the home economics department.

Four groups of electives are offered. Students are expected to take the course as prescribed on pages 34-37, with choice of options; but when entered in other courses in the college, they may elect certain work in the home economics department, under direction of the head of the department.

#### REQUIRED WORK IN HOME ECONOMICS.

1. House Construction, Sanitation and Cost.....	2½ credits.
2. Principles of Selection and Preparation of Food.....	4 "
3. Household Hygiene.....	1½ "
4. Economic Uses of Food.....	5 "
5. Personal Hygiene.....	2 "
6. Dietetics.....	2 "
7. Home Decoration.....	2 "
8. Food Supplies and Dietaries.....	3 "
9. Public Hygiene.....	1 "
10. Textiles.....	2 "
11. Child Hygiene.....	2 "
12. Household Art.....	2 "
13. Study of the Family.....	2 "
14. Household Administration.....	3 "

#### OPTIONS.

Group A. Education and Home Economics.....	14 credits.
" B. Agriculture.....	14 "
" C. Elective.....	14 "

## II. Sub-Freshmen Classes.

For a number of years it has been found necessary to maintain at the college a preparatory school. Young people in whole or in part unprepared to enter our Freshman class, who do not have at their homes the advantages of high-school training, or who, without high-school advantages, have arrived at a certain maturity that renders it inadvisable for them to undertake the work at the home school, still continue to apply for admission. We are anxious to discontinue preparatory work, both in order that we may devote all our resources to our own legitimate field, and also that we may not seem to be in competition with the excellent high schools now scattered all over the state. Yet among these applicants, the exceptional cases just mentioned and others similar in nature seem to require that we still provide for them. We have, therefore, arranged the two Sub-Freshman years outlined on page 38. We wish it, however, clearly under-

stood that we do not encourage students to come here for purely preparatory work; on the contrary, we strongly urge all young people to get their college preparation at a regular high school.

### III. Short Courses in Agriculture, in Engineering, and in Home Economics.

There is a large class of young men and women who, unlike the more fortunate young people that are able, after completing the high-school work, to go through a full four years' college course, find themselves compelled, sometimes with a high-school course as preparation, much more frequently, however, without such training, to plan for entrance into industrial life by the shortest and quickest preparation that will give them the elementary knowledge and skill requisite. For such persons we have arranged a short course in agriculture, one in engineering, and special work in home economics. These courses are each two years in length; they require for entrance only that degree of training represented by a common-school education; they are in no sense preparatory to the corresponding college courses, and they do not, either directly or indirectly, lead to an academic degree. A certificate, however, will be awarded on completion of one of these courses.

They are intended to be intensely and dogmatically practical, giving facts and processes without attempting to explain and correlate these by referring them to their basis in scientific theory or investigation. Moreover, each part of the course, and each subject, is in a way independent; so that the student who remains for any part of the course, say one year or even less, will be able to realize a definite acquisition, a certain distinct fitness, that he did not before possess. It is hoped that, after a little, the certificate may come to have, among farm owners and among the employers of labor in the factories and shops of the state, a certain well-defined value as commendatory of the persons holding it. For tabulated statement of courses, see page 38.

### IV. Special Poultry Course.

For many years this college has offered a winter course in the poultry industry. In fact, the first poultry course to be offered in the United States was offered here eleven years ago. The college will continue to offer the twelve weeks' course during the winter term.

The object of this course is to give the most direct and practical instruction to those who contemplate taking up the business, or to those already engaged in it, to enable them to proceed with greater certainty in their work and make the most of whatever they invest. All instruction bears immediately on the science and art of caring for fowls by the latest and best methods in practice. Practical poultry men, prospective judges, and college graduates who desire to equip themselves as instructors and experimenters will find in this course much that they need. Special circulars will be sent on request.

## V. Selected Courses.

Whenever possible, students are urged to enter one of the courses leading to a degree. The arrangement of these courses is the result of careful thought and long experience as to the best combination of studies to fit one for the various occupations in which a technical education is required; and it is believed that no such thorough preparation can be obtained from special courses selected by the students.

However, any subjects described in this catalogue may be taken by special students of maturity, who can satisfy the professor in charge of the subject chosen that they are prepared to derive benefit from such work.

## Requirements for Admission to the College, 1908.

Graduates from high schools, and other schools of similar grade, are admitted without examination, on certificates which are filled out by their principals. The candidate must apply to the college for the certificate, giving the address of his principal who is to certify him. The college will correspond with the principal, furnishing blanks for him to fill. Satisfactory evidence as to good moral character must be presented to the committee on entrance examinations.

Candidates for admission who are not graduates of high schools must in all cases supply a statement of such school records as they may have made, and also a certificate or testimonial of good moral character. The latter may be from some recent teacher, from a pastor, or from other responsible persons.









Candidates not entering the Freshman class on certificate will be examined in arithmetic; algebra; plane geometry; English grammar; advanced English; one year of German, French, or Latin; one year of science and one year of history, or their equivalents.

Candidates may enter any of the higher classes for which by examination they show themselves prepared.

In the arithmetic examination, especial attention will be paid to fractions, the metric system, simple and compound proportion, and square root; thorough drill in mental arithmetic will be necessary. The applicant should have mastered all of Wentworth's School Algebra as far as page 335, and Wells's Plane Geometry, or their equivalents.

The English requirements are those prescribed for entrance to the New-England colleges. The student will be expected to show familiarity with the works named below. These are divided into two classes. Those marked (A) are to be read, and the candidate will be required to show a general knowledge of their subject-matter and of the lives of the authors. Those marked (B) are to be thoroughly studied, so that the candidate will be able to pass an examination upon their subject-matter and structure. To be acceptable, the candidate's paper must show a good knowledge of spelling, capitalization, punctuation, sentence and paragraph structure. The books prescribed for 1909-1911 are as follows:

### A. For Reading.

#### GROUP I.—*Two books to be selected.*

Shakspere's As You Like It; Julius Cæsar; The Merchant of Venice; Twelfth Night; Henry V.

#### GROUP II.—*One book to be selected.*

Bunyan's The Pilgrim's Progress, Part I; Bacon's Essays; Addison's The Sir Roger DeCoverley Papers; Franklin's Autobiography.

#### GROUP III.—*One book to be selected.*

Chaucer's Prologue; Selections from Spenser's Faerie Queene; Pope's The Rape of the Lock; Goldsmith's The Deserted Village; Palgrave's Golden Treasury (First Series), Books II and III, with special attention to Dryden, Collins, Gray, Cowper, and Burns.

#### GROUP IV.—*Two books to be selected.*

Hawthorne's The House of the Seven Gables; Thackeray's Henry Esmond; George Eliot's Silas Marner; Dickens's A Tale of Two Cities; Scott's Ivanhoe; Scott's Quentin Durward; Goldsmith's The Vicar of Wakefield; Mrs. Gaskell's Cranford; Blackmore's Lorna Doone.

GROUP V.—*Two books to be selected.*

Emerson's Essays (Selected); Ruskin's Sesame and Lilies; Irving's Sketch Book; Carlyle's Heroes and Hero-Worship; De Quincey's Joan of Arc and The English Mail Coach; Lamb's Essays of Elia.

GROUP VI.—*Two books to be selected.*

Palgrave's Golden Treasury (First Series), Book IV, with special attention to Wordsworth, Keats, and Shelley; Coleridge's The Ancient Mariner; Lowell's The Vision of Sir Launfal; Scott's The Lady of the Lake; Poe's Poems; Tennyson's Gareth and Lynette, Lancelot and Elaine, and The Passing of Arthur; Arnold's Sohrab and Rustum; Browning's Cavalier Tunes, The Lost Leader, How They Brought the Good News from Ghent to Aix, Evelyn Hope, Home Thoughts from Abroad, Home Thoughts from the Sea, Incident of the French Camp, The Boy and the Angel, One Word More, Hervé Riel, Pheidippides; Macaulay's Lays of Ancient Rome.

## B. For Study.

Shakspere's Macbeth; Milton's Lycidas, Comus, L'Allegro and Il Penseroso; Burke's Speech on Conciliation with America, or Washington's Farewell Address and Webster's First Bunker Hill Oration; Macaulay's Life of Johnson, or Carlyle's Essay on Burns.

## Degrees.

The college confers two degrees. The degree of Bachelor of Science is conferred upon a student who has completed one of the four-year courses outlined on pages 33–37. The degree of Master of Science is conferred upon those holding a Bachelor's degree from this institution, in regular order, or from other institutions having equal requirements, upon the completion of one year of resident study, the presentation of a satisfactory thesis in applied or economic science, and upon passing examinations in the subjects pursued. Persons wishing to apply for the Master's degree should write to the Committee on Graduate Study for further details.

## Teachers' Certificates.

The following resolution recently adopted by the Board of Education of this state is self-explanatory: "The certification of the president (of this college) that an applicant for a teacher's certificate has pursued a secondary school course of four years, subject to the

approval of the committee on qualifications, and in addition thereto has pursued a four years' collegiate course in the Rhode Island College will be received as evidence of the required qualifications in scholastic subjects for a teacher's certificate of the first grade."

### Opportunities Offered to Women.

The course in home economics is especially designed for women, although all other courses are open to them. Special waiting and study rooms are provided for the women who are day students. For boarders commodious quarters have been provided in the village, two minutes' walk from the college grounds.

### Expenses.

Tuition is free to residents of Rhode Island. To non-residents of the state, tuition is \$15 a term or \$30 a year.

The regular college expenses are tabulated as follows:

Board, \$3.50 per week.....	\$126 00
Room-rent, including heat and light.....	30 00
Incidental fee, \$4.50 per term.....	9 00
Laboratory deposit, \$5 per term.....	10 00
Uniform for military drill.....	16 00
	<hr/>
	\$191 00

The first four items must be paid quarterly in advance; that is to say, \$43.75 will be required at the opening of the year, September 9, 1908, and also at each of the following dates: November 11, 1908; February 3, 1909; and April 7, 1909. Non-residents of the state should add to this sum \$7.50 for tuition. In order to secure dormitory accommodations, the student is required to deposit one dollar with the application; the dollar to be credited on the fall-term room-rent. If the student fails to take the room, the dollar is forfeited. The uniform also must be paid for at the opening of the college year in advance. Against the laboratory deposit will be charged all material used in the various laboratories, and the destruction, breakage, or marring of apparatus and tools. If anything remains after such deductions have been made, the said remainder will be refunded. If, on the other hand, the charges shall at any time exceed the deposit, the student will be required to cover the excess by a further deposit.

Nothing has been said concerning books. The probable cost of these will be from \$15.00 to \$30.00 per year. For miscellaneous expenses connected with college life, students should add a sum varying from \$10.00 to \$25.00. A fee of 50 cents will be charged for each examination to make up a condition. Graduates pay the cost of diplomas, \$5.00. *No diplomas will be issued until all term bills have been paid.* Room-rent and incidental deposit will not be refunded on withdrawal during the quarter. Students not taking any laboratory work will not be required to make a laboratory deposit.

UNIFORM.—Every able-bodied male student is required to drill and to wear a uniform. The uniform must be paid for immediately on entering the college, when the students are measured for the suits. When worn only on drill and properly cared for, one uniform may last two or more years. The student may, however, wear his uniform all the time.

TRANSPORTATION.—The college conveys students daily to and from the railroad station free of charge. Once at the beginning and end of each term, a team conveys trunks to and from the station.

BOARDING STUDENTS.—The price of board for 1908-9 will be \$3.50 per week. Students who *leave regularly every week* on Friday afternoon and return Monday morning will pay \$2.50 per week. No other reduction on board is made for less than two whole days' absence at one time, and then only when written notice is given in advance. No person will be admitted to the dining-room until he has secured from the bursar a meal ticket, on the back of which will be found the rules governing the holder of such ticket. After this ticket is issued, all charges for board will be made in accordance therewith unless the student has the ticket changed by the bursar. Arrangement of charges for meals sent to students' rooms for any cause must be made in advance.

FURNITURE.—The rooms in the women's dormitory are provided with necessary furniture, including mattresses, but no other bedding material. *All students in the men's dormitory are required to supply their own furniture and bedding.* The necessary furniture may be obtained at the college when desired. A room may be furnished for from \$8.00 to \$10.00. Iron bedsteads three feet wide are included under room-rent. The furniture, if properly kept, may be sold, when the student leaves, for one-half to three-fourths the original price.









ROOMS IN THE VILLAGE.—At present the dormitory facilities for young men are taxed beyond their capacity. Students especially desirous of rooming in the dormitory are advised to make their applications at once. It is probable that most of the dormitory rooms will be occupied by the older students. Arrangements have been made for rooms, however, in the village of Kingston, some of these being under college management and others in private houses. In the case of the former, room-rent will vary from 60 cents to \$1.00 per week, with stoves and bedsteads furnished, the student to provide other furnishings and fuel himself. Furnished rooms in private houses for students who occupy them throughout the college year range from \$1.25 to \$2.00 per week.

COLLEGE STORE.—Students will be required to pay cash at the store for all books and other supplies.

DAMAGE FUND.—All damage not due to ordinary wear shall be assessed to students as follows:

1. Students at once acknowledging damage and agreeing to pay for same will be assessed actual cost of repair, including labor.
2. Students found guilty of such damage but not acknowledging and settling for the damage will be charged double the cost of repair.
3. Students will be responsible for damage in their own rooms.
4. Damage that is not settled as above may be assessed to all the students or to a group of students, pro rata. Each case and the amount of assessment will be considered on its merits.

### Employment at the College.

There is a certain amount of labor about the college buildings, on the farm, at the experiment station, and in the offices and laboratories, for which students will be employed whenever it is feasible to do so. Industrious students frequently earn an amount which aids considerably in paying their expenses, a sum varying from \$25.00 to \$125.00 per year.

In view of the fact, however, that the amount of this work is strictly limited and that it is not the policy of the college to create such work, and, furthermore, because of the increasing number of students and the more frequent applications for student labor, it seems desirable

to state the conditions under which this work will hereafter be assigned.

1. Application for work must be made on a blank which will be issued to the student on request. *Persons desiring such work must, if under age, bring a statement from parent or guardian certifying to what extent the student must depend upon himself for support.* It must be borne in mind that the student can not make this certification for himself. Application for work, however, under no circumstances creates a claim on the college that work shall be assigned the applicant.

2. At a certain time before the opening of the fall term all applications for work will be considered, and appointments will be made after due consideration of

- (a) Capability for the work.
- (b) Trustworthiness.
- (c) Good record as a student.
- (d) Need for financial aid.

[NOTE: Other things being equal, preference will be given to residents of the state, to upper class students, and to those who room and board at the college.]

3. Such appointments are subject to revocation at any time, for

- (a) Incompetency.
- (b) Unfaithfulness in discharge of duty.
- (c) Misconduct or disloyalty to the institution.
- (d) Bad record in studies.

4. Such appointments must be recognized as

- (a) A mark of trust and responsibility.
- (b) A real and vital part of one's training for promptness, for initiative, and for leadership.
- (c) One of the very best criteria the teacher has in determining his estimate of the student's character, both for his own guidance and for recommendation to employers.

5. Payment for services will vary from ten to fifteen cents per hour, according to the grade and difficulty of the work and the experience of the student. In general, students should not expect more than ten cents an hour for the first year. It is a rule of the college that any student desiring to perform more than twenty hours of student labor per week must secure permission from the faculty council. In the future, it may be necessary to limit the amount which any one student may receive for student labor.



THE VILLAGE CHURCH.





Some young people have the impression that the college offers such opportunities for self-help that it is safe to enter with practically no funds, relying solely on money earned while here. In exceptional cases this may be done, but prospective students are strongly advised not to enter until they have at least \$100.00 at their disposal. A student who has to make his own way must also plan to work steadily during both the short and long vacations. Occasional vacation work at the college can be furnished to students, but as a rule they should look elsewhere for this class of work.

### Religious Influences.

This college is a state institution, and, consequently, the widest latitude is given to all creeds and forms of religious belief. Simple chapel exercises are held every school-day morning, and are conducted by the president or some other member of the faculty. While attendance is not compulsory, it is desired and expected that all students will attend chapel.

A branch of the Intercollegiate Young Men's Christian Association is doing active work among the men students, holding a meeting every Sunday throughout the year. This association conducts courses in bible study and is taking the lead in endeavoring to establish sound and high ideas of college life.

The Young Women's Christian Union is doing a similar work for the young women.

The village church cordially invites all students to attend its services and, if possible, to join its membership. Every effort is made by the college to minister to the higher life of the students and to bring before them the noblest ideals, without in any way attempting to coerce them to particular beliefs.

### Scientific and Engineering Lectures.

Under the auspices of the science and engineering clubs evening lectures have been given during the year, as follows:

- Oct. 25. Prof. W. E. Castle, RECENT STUDIES IN HEREDITY AND THEIR BEARING UPON THE PROBLEMS OF BREEDING.  
Nov. 2. Dr. Alfred M. Tozzer, CENTRAL AMERICA: ITS PEOPLE AND ITS MONUMENTS.

- Nov. 8. Prof. Frederic P. Gorham, SEA FARMING.  
 16. Prof. H. E. Walter, THE THEORIES OF BIRD MIGRATION.  
 23. Prof. Charles W. Brown, THE EVOLUTION OF THE EARTH.  
 Dec. 6. Prof. A. D. Mead, SOME PRINCIPLES OF ORGANIC EVOLUTION.  
 Jan. 11. Dr. Leon J. Cole, THE QUESTION OF THE ORIGIN AND ARTIFICIAL  
 PRODUCTION OF LIFE.  
 April 13. Mr. C. J. Hogue, REINFORCED CONCRETE.  
 May 4. Prof. Howard C. Ives, ST. GOTHARD RAILWAY.

## The Rhode Island College Lecture Association.

Faculty and students, uniting with residents of the vicinity, conduct a winter lecture course, the aim of which is to introduce talented speakers upon subjects both entertaining and instructive. The association may be looked upon as a permanent and important factor in college activities. For the season of 1907-1908 the following program was secured:

- Dec. 10. Mr. S. A. Long, HUNGRY PEOPLE.  
 Jan. 10. Rev. Henry R. Rose, PARSIFAL AND THE HOLY GRAIL. Illustrated  
 with colored slides.  
 Feb. 5. Tufts College Glee and Mandolin Clubs.  
 Mar. 6. E. Charlton Black, LL.D., STEVENSON AND BARRIE, A STUDY IN  
 PERSONALITY.  
 Mar. 19. Miss Nellie Dean and Miss Florence Purrington, Piano and Violin  
 Recital.

## The Kingston Prize.

For two years past the sum of sixty dollars has been offered by a friend of the college to encourage students to competitive work in essay writing or debate. In 1907 two prizes, of fifteen and five dollars, respectively, were awarded for the best essays in each of the three departments—agriculture, engineering, and science. In agriculture, Fred Kenyon Crandall, '09, received the first prize; Harry Reynolds Lewis, '07, the second. In engineering, the successful contestants were John Kenyon Lamond, '07, and Clesson Herbert Field, '08; and in science, Ruby Belle Rockwell, '09, and Rhobie Lucelia Cargill, '09.

## The Library.

The library occupies a large room in Lippitt Hall, and numbers over fifteen thousand volumes. The books are arranged in stacks, to which the students have free access. The Dewey system of classification is used; and a dictionary catalogue gives author, subject, and title. As the library has been from the first intended for reference work, the various departments of instruction have made their selections with the greatest care. Combined with the library is the reading-room, where over one hundred of the leading periodicals—of literary, scientific, and general interest—are on file. From time to time these are bound, and prove of great value in reference work.

The library has recently been made a government depository; that is, will henceforth receive a copy of each work published by the government. It will, therefore, offer excellent opportunities for scientific investigation and research.

The library is open every week day from 7:30 A. M. to 6:00 P. M., with the exception of a half-hour at noon. The librarian or her representative is in constant attendance to aid any one in search of information. As the college is an institution designed to further the educational interests of Rhode Island, all residents of the state are at liberty to use its library.

## Location.

The college campus is one and a half miles from Kingston station, which is at the junction of the main line of the N. Y., N. H. & H. R. R. with the Narragansett Pier branch, thus insuring excellent railroad accommodations. The buildings are on a hill which commands an extended view of the surrounding country—a location both healthful and beautiful. Sixteen trains stop daily at the station, so that the college is accessible from Providence or from New York city at almost any hour in the day. The ride from Providence is about forty to forty-five minutes in length. From New York the time is some four hours.

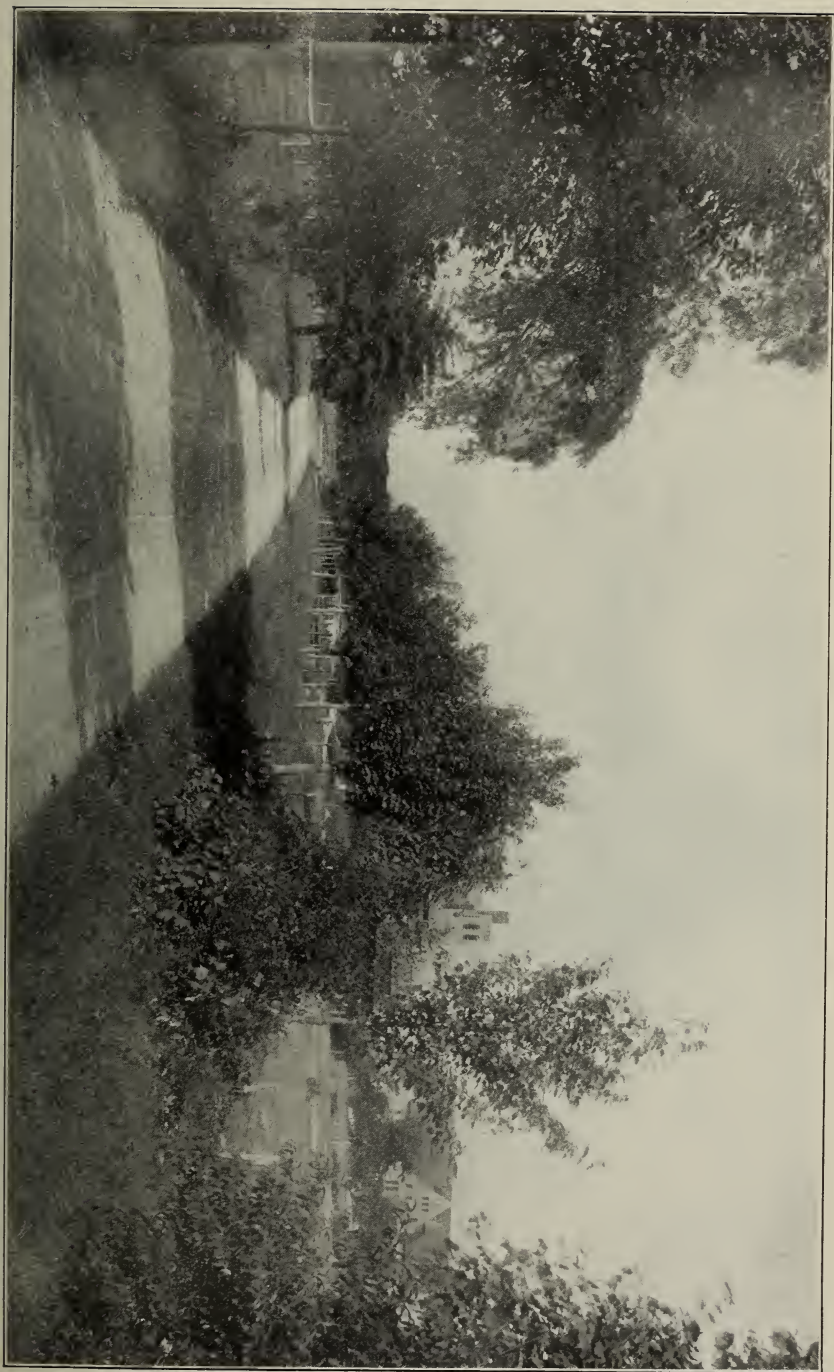
## The Courses of Study Leading to a Degree.

**EXPLANATORY.**—The Roman numeral following a subject refers to the subject number; the Arabic figures next following indicate the page of the catalogue on which the subject is described. The last Arabic figure indicates the number of hours credit for the subject. A credit is given for one recitation; or for one exercise of two hours in laboratory, field, or shop. All women students throughout the four years are required to take physical exercise and hygiene in place of military drill and tactics. Consulting with the committee on courses of study, the student chooses his electives from the subjects described on pages 39-72. For requirements of admission to these courses, see pages 24-26.

### Freshman Year.

<i>Agriculture.</i>			<i>Engineering.</i>			<i>Teachers' Course in Applied Science.</i>			<i>Home Economics.</i>		
First Term.		Second Term.	First Term.		Second Term.	First Term.		Second Term.	First Term.		Second Term.
Subjects.	Credits.		Subjects.	Credits.		Subjects.	Credits.		Subjects.	Credits.	
English I (64).....	1		English I (64).....	1		English I (64).....	1		English I (64).....	1	
Oral Expression I (65).....	1		Oral Expression I (65).....	1		Oral Expression I (65).....	1		Oral Expression I (65).....	1	
Modern Language I (65).....	4		Modern Language I (65).....	4		Modern Language I (65).....	4		Modern Language I (65).....	4	
Mathematics IIIa (66).....	5		Mathematics IIIa, IVa (66) 5	5		Mathematics IIIa, IVa (66) 5	5		Mathematics IIIa (66).....	4	
Chemistry I, II (48).....	3½		Chemistry I, II (48).....	3½		Chemistry I, II (48).....	3½		Chemistry I, II (48).....	3½	
Botany I (46).....	3		Botany I (46).....	3		Botany I (46).....	3		Botany I (46).....	3	
Agonomy I (40).....	2		Mechanical Engineering VIII (56).....	3		Mechanical Engineering VIII (56).....	3		Freehand Drawing II (50).....	1	
Horticulture I (44).....	2		Mechanical Engineering IX, XI (56).....	3		Freehand Drawing II (50).....	2		Physical Training.....	1	
Animal Husbandry I, III (42).....	4		Mechanical Engineering I (55).....	3		Freehand Drawing II (50).....	2		Home Economics.....	2½	
Freehand Drawing I (50).....	1		Freehand Drawing I (50).....	2		Military Drill and Tactics (67) 2	2		Subject I (51).....	2½	
Mechanical Engineering I (55).....	1½		Military Drill and Tactics (67) 2	2		Physical Training.....	1		Subject II (52).....	4	
Military Drill and Tactics (67) 2	2					or			Subject III (52).....	1½	
						Physical Training.....	1				
						or					
						Home Economics V (52).....	1				
						{ Home Economics V (52).....	1				





AN APPROACH TO THE COLLEGE.





<i>Agriculture.</i>			<i>Engineering.</i>			<i>Teachers' Course in Applied Science.</i>			<i>Home Economics.</i>		
First Term.	Second Term.		First Term.	Second Term.		First Term.	Second Term.		First Term.	Second Term.	
Subjects.	Credits.		Subjects.	Credits.		Subjects.	Credits.		Subjects.	Credits.	
English II (64).....	1		English II (64).....	1		English II (64).....	1		English II (64).....	1	
Oral Expression II (65).....	1		Oral Expression II (65).....	1		Oral Expression II (65).....	1		Oral Expression II (65).....	1	
Modern Language II (65).....	3		Chemistry III (48).....	3		Modern Language II (65).....	3		Modern Language II (65).....	3	
Chemistry III (48).....	3		Physics III (69).....	4		Chemistry III (48).....	3		Chemistry III (48).....	3	
Physics I (69).....	5		Physics III (69).....	1½		Chemistry IV (48).....	4		Chemistry IV (48).....	4	
Botany II (46).....	3		Mathematics V, VI (66).....	5		Physics IV (48).....	4		Zoology I, III (71).....	3	
Zoology I (71).....	3		Mechanical Engineering II (55).....	2½		Physics III (69).....	1½		Zoology I, III (71).....	3	
Zoology III (71).....	4		Mechanical Engineering III (55).....	2		Botany II (46).....	3		Freehand Drawing III (50).....	2	
Animal Husbandry XII (43) I.....	1		Mechanical Engineering III (55).....	1		Zoology I, II (71).....	3		Freehand Drawing IV (50).....	1	
Agromony II (40) VI II (41).....	2		Military Drill (67).....	1		Zoology IX (72).....	3		Physical Training.....	1	
Horticulture II (44).....	2		Options: A, B, C, D.			Military Drill (67).....	1		Home Economics.....	1	
Civil Engineering I (61).....	3		One of these must be chosen:			Physical Training.....	1		Subject IV (52).....	5	
Mechanical Engineering VIII (56).....	2		A. Mechanical Engineering:						Subject V (52).....	1	
Military Drill (67).....	1		Subject XIXa (57).....	5					Subject VI (52).....	2	
			Civil Engineering I (61) 3	2					Subject VII (52).....	2	
			B. Electrical Engineering:								
			Mechanical Engineering XIII (56).....	3							
			Mechanical Engineering XIXa (57).....	2							
			Civil Engineering I (61) 3								
			C. Civil Engineering:								
			Subjects I, II (61).....	3							
			Mechanical Engineering XIXa (57).....	2							
			D. Chemical Engineering:								
			Subject IV (48).....	4							
			Modern Language II (65) 3	3							

## Junior Year.

<i>Agriculture.</i>			<i>Engineering.</i>			<i>Teachers' Course in Applied Science.</i>			<i>Home Economics.</i>		
First Term.		Second Term.	First Term.		Second Term.	First Term.		Second Term.	First Term.		Second Term.
Subjects.	Credits.	Credits.	Subjects.	Credits.	Credits.	Subjects.	Credits.	Credits.	Subjects.	Credits.	Credits.
English III, IV (64)	2	2	English III, IV (64)	2	2	English III, IV (64)	2	2	English III, IV (64)	2	2
Oral Expression III (65)	1	1	Oral Expression III (65)	2	1	Oral Expression III (65)	1	1	Oral Expression III (65)	1	1
History I (63)	3	3	History I (63)	2	2	History I (63)	2	3	History I (63)	2	3
Military Drill (67)	1	1	Military Drill (67)	3	3	Psychology (70)	3	1	Psychology (70)	3	3
Botany IV (46)	2	2	Mechanical Engineering XVII (56)	1	1	Military Drill (67) or Physical Training	1	1	Chemistry XIX (49)	3	3
Chemistry XIV (48)	4	4	Options: A, B, C, D.	1	1	Elective	1	1	Zoology VII, VIII (72)	3	3
Zoology IV (71)	4	4	One of these must be chosen.	3	3	Subjects not selected for the option to be chosen.	5	5	Physical Education	1	1
Agronomy III (40)	4	4	A. Mechanical Engineering	3	3	Options: A, B, C.	5	5	Home Economics	3	3
Animal Husbandry VII (43)	2	2	Subject XIII (56)	3	3	One of these must be chosen.	3	3	Subject VIII (52)	1	1
Horticulture III (44)	1	1	Subjects XV, XVI (56)	3	3	A. Chemistry	3	3	Subject IX (52)	2	2
Horticulture IV (44)	2	2	Subjects XVIIa (56) XX (57) XXII (57)	3	3	Options: A, B, C.	3	3	Subject X (52)	2	2
Mechanical Engineering XII (56)	1	1	Subjects XVIII, XIX, XXI (57)	5	5	One of these must be chosen.	4	4	Subject XI (53)	2	2
Mechanical Engineering XIIIa (56)	1	1	Chemistry XIII (48)	2	2	A. Chemistry	3	3	Options: A, B, C.	3	3
One of these must be chosen.	5	5	Electrical Engineering IV (59)	3	3	Subject V (48)	3	3	Teachers' Option:	3	3
A. Agronomy	5	5	Subjects I, III (59)	3	3	Subject VI (48)	4	4	A. Education I (54)	2	2
Subjects V, VI (41)	5	5	Subject II (59)	3	3	Subject VII (48)	4	4	Education II (54)	2	2
B. Horticulture	5	5	Physics IV, V (69)	3	3	Subject XI (48)	7	10	Home Economics XV (53)	2	2
Subjects V (44) VII (45)	5	5	Chemistry VI (69)	2	2	B. Biology	7	10	B. Agriculture	2	2
C. Animal Husbandry	5	5	Chemistry XIII (48)	2	2	[Botany (46) and Zoology (71)]	7	10	Agromony VII (41)	2	2
Subjects IV (42) XI (43)	5	5	Mechanical Engineering XV, XVI (56)	3	3	C. Agriculture (39)	7	10	Animal Husbandry (43)	2	2
			Civil Engineering	3	3	Mechanical Engineering XVIII, XIX, XXI (57)	5	5	Horticulture II (44)	2	2
			Subjects III, IV (61)	7	4				C. Elective	3	3
			Subject V (61)	4	4						
			Mechanical Engineering XV, XVI (56)	3	3						
			Mechanical Engineering XVIII, XIX, XXI (57)	5	5						
			Electrical Engineering IV (59)	3	3						
			Chemistry XIII (48)	2	2						
			Geology I (63)	2	2						
			Chemical Engineering	3	3						
			Subjects V, VI (48)	6	6						
			Subject VII (48)	1	1						
			Mechanical Engineering	1	1						

Agriculture.			Engineering.			Teachers' Course in Applied Science.			Home Economics.		
First Term.	Second Term.	Credits.	First Term.	Second Term.	Credits.	First Term.	Second Term.	Credits.	First Term.	Second Term.	Credits.
Subjects. { Economics I (51) History II (63). English V (64). { Oral Expression IV (65).....5 Agronomy X (41).....3 Agronomy XI (41).....3 Animal Husbandry VI (43).....3 Military Drill (67).....1 Thesis.....3 Options: A, B, C. One of these must be chosen. A. Agronomy: Subject VIII (41).....2 Botany V (46).....3½ Mechanical Engineering VII (56).....2 Subject IX (41).....2 Botany VI (46).....3½ B. Horticulture: Subjects X, XI (45).....4 Botany V (46).....3½ { Subject VI or VIII (45) Botany VI (46).....4 { Subject XIII (45).....4 Botany III (46).....1 C. Animal Husbandry: Subjects II, IX (43).....5 Agronomy VIII (41).....2 Subjects VIII, X, XIII (43) or V (43).....7	Subjects. { Economics I (51) History II (63). English V (64). { Oral Expression IV (65).....5 Military Drill (67).....1 Thesis.....3 Options: A, B, C, D. One of these must be chosen. A. Mechanical Engineering: Subject IV (55).....3 Subjects XXXIII, XXXIIIA, XXXIV, XXV (57).....3 Subject XXVI (58).....5 B. Electrical Engineering: Subject V (59).....3 Subject VI (59).....3 Subject VII (59).....1½ Subject VIII (60).....2 Subject IX (60).....2 Subject X (60).....2 Subject XI (60).....1 Physics VII (70).....1 C. Civil Engineering: Subjects VI, VII (61).....4 Subject VIII (62).....3 Subject IX (62).....5 Subject X (62).....2 Subject XI (62).....2 Subject XII (62).....3 Subjects XIII, XIV (62).....3 Chemical Engineering: Subject IX (48).....4 Subject XII (48).....4 Subject XIII (48).....2 Subject XV (49).....1½ Subject XVI (49).....4 Subject XVII (49).....3 Subject XVIII (49).....3	Subjects. { Economics I (51) History II (63). English V (64). { Oral Expression IV (65).....5 Military Drill (67).....1 Thesis.....3 Options: A, B, C. One of these must be chosen. A. Chemistry Subject IX (48).....4 Subject XII (48).....4 Subject XV (49).....1½ Subject XVI (49).....3 Subject XVII (49).....3 B. Biology: [Botany (46), Zoölogy (41)].....7 C. Agriculture (39).....7	Subjects. { Economics I (51) History II (63). English V (64). { Oral Expression IV (65).....5 Military Drill (67).....1 Thesis.....3 Options: A, B, C. One of these must be chosen. A. Chemistry Subject IX (48).....4 Subject XII (48).....4 Subject XV (49).....1½ Subject XVI (49).....3 Subject XVII (49).....3 B. Biology: [Botany (46), Zoölogy (41)].....7 C. Agriculture (39).....7	Subjects. { Economics I (51) History II (63). English V (64). { Oral Expression IV (65).....5 Military Drill (67).....1 Thesis.....3 Options: A, B, C. One of these must be chosen. A. Chemistry Subject IX (48).....4 Subject XII (48).....4 Subject XV (49).....1½ Subject XVI (49).....3 Subject XVII (49).....3 B. Biology: [Botany (46), Zoölogy (41)].....7 C. Agriculture (39).....7	Subjects. { Economics I (51) History II (63). English V (64). { Oral Expression IV (65).....5 Military Drill (67).....1 Thesis.....3 Options: A, B, C. One of these must be chosen. A. Chemistry Subject IX (48).....4 Subject XII (48).....4 Subject XV (49).....1½ Subject XVI (49).....3 Subject XVII (49).....3 B. Biology: [Botany (46), Zoölogy (41)].....7 C. Agriculture (39).....7	Subjects. { Economics I (51) History II (63). English V (64). { Oral Expression IV (65).....5 Military Drill (67).....1 Thesis.....3 Options: A, B, C. One of these must be chosen. A. Chemistry Subject IX (48).....4 Subject XII (48).....4 Subject XV (49).....1½ Subject XVI (49).....3 Subject XVII (49).....3 B. Biology: [Botany (46), Zoölogy (41)].....7 C. Agriculture (39).....7	Subjects. { Economics I (51) History II (63). English V (64). { Oral Expression IV (65).....5 Military Drill (67).....1 Thesis.....3 Options: A, B, C. One of these must be chosen. A. Chemistry Subject IX (48).....4 Subject XII (48).....4 Subject XV (49).....1½ Subject XVI (49).....3 Subject XVII (49).....3 B. Biology: [Botany (46), Zoölogy (41)].....7 C. Agriculture (39).....7	Subjects. { Economics I (51) History II (63). English V (64). { Oral Expression IV (65).....5 Military Drill (67).....1 Thesis.....3 Options: A, B, C. One of these must be chosen. A. Chemistry Subject IX (48).....4 Subject XII (48).....4 Subject XV (49).....1½ Subject XVI (49).....3 Subject XVII (49).....3 B. Biology: [Botany (46), Zoölogy (41)].....7 C. Agriculture (39).....7	Subjects. { Economics I (51) History II (63). English V (64). { Oral Expression IV (65).....5 Military Drill (67).....1 Thesis.....3 Options: A, B, C. One of these must be chosen. A. Chemistry Subject IX (48).....4 Subject XII (48).....4 Subject XV (49).....1½ Subject XVI (49).....3 Subject XVII (49).....3 B. Biology: [Botany (46), Zoölogy (41)].....7 C. Agriculture (39).....7	Subjects. { Economics I (51) History II (63). English V (64). { Oral Expression IV (65).....5 Military Drill (67).....1 Thesis.....3 Options: A, B, C. One of these must be chosen. A. Chemistry Subject IX (48).....4 Subject XII (48).....4 Subject XV (49).....1½ Subject XVI (49).....3 Subject XVII (49).....3 B. Biology: [Botany (46), Zoölogy (41)].....7 C. Agriculture (39).....7	

## The Courses of Study Leading to a Certificate.

The requirements for admission to the Sub-Freshman course are arithmetic, English grammar, geography, and United States history. The only scholarship requirement for admission to the Short Courses in Agriculture, Engineering, and Domestic Science is a common-school education. The age for admission to all four courses must be at least sixteen years. The courses lead to a certificate.

<i>Sub-Freshman.</i>			<i>Short Course in Agriculture.</i>			<i>Short Course in Engineering.</i>			<i>Short Course in Domestic Science.</i>		
FIRST YEAR.			FIRST YEAR.			FIRST YEAR.			FIRST YEAR.		
First Term.	Second Term.		First Term.	Second Term.		First Term.	Second Term.		First Term.	Second Term.	
Subjects.	Credits.		Subjects.	Credits.		Subjects.	Credits.		Subjects.	Credits.	
English C (64).....	5		English A (64).....	4		English A (64).....	4		English A (64).....	4	
History A (63).....	2		Mathematics C, D (66).....	4		Mathematics C, D (66).....	4		Mathematics C, D (66).....	4	
Mathematics A (66).....	4		Botany A (46).....	4		Mechanical Engineering A (58).....	4		Botany A (46).....	4	
Physics A (70).....	5½		Zoölogy A (72).....	3		Mechanical Engineering B (38).....	4½		Zoölogy A (72).....	3	
Botany A (46).....	3		Agronomy C (41).....	4½		Mechanical Engineering D (38).....	3		Physical Training.....	4½	
Freehand Drawing II, III (50).....	3		Horticulture A (45).....	3		Freehand Drawing I (50).....	3		Physical Training.....	4½	
or	1		Animal Husbandry A, B (43).....	4		Physics A (70).....	2		Domestic Science A (53).....	3½	
Mechanical Engineering A (58).....	1		Mechanical Engineering H (58).....	1½		Military Drill (67).....	1		Domestic Science B (53).....	3½	
Military Drill (67).....	1		Mechanical Engineering I (58).....	1½			1		Domestic Science C (53).....	2½	
			Military Drill (67).....	1½			1			2	
SECOND YEAR.			SECOND YEAR.			SECOND YEAR.			SECOND YEAR.		
English D (64).....	3		English B (64).....	3		English B (64).....	3		English B (64).....	3	
German A (65).....	5		Mathematics F (66).....	4		Mathematics F (66).....	4		Mathematics F (66).....	4	
Mathematics B (66).....	3		Chemistry A (49).....	4		Mechanical Engineering C (58).....	4½		Chemistry A (49).....	4	
Mathematics E (66).....	4		Agronomy A (41).....	4		Mechanical Engineering E (58).....	5		Physical Training.....	1	
Physics B (70).....	2½		Agronomy B (41).....	4		Physics B (70).....	2½		Mechanical Engineering G (58).....	1	
Mechanical Engineering G (58).....	1		Animal Husbandry C, D (43).....	3		Military Drill (67).....	1				
or	1		Animal Husbandry E (43).....	3					Domestic Science D (54).....	2	
Mechanical Engineering A (58).....	1		Horticulture B (45).....	2					Domestic Science E (54).....	3	
Military Drill (67).....	1		Mechanical Engineering J (58).....	2					Domestic Science F (54).....	2	
			Agronomy D (41).....	2							
			Military Drill (67).....	1							



## Department of Instruction.

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The following subjects are offered in the different departments. All subjects in the department of instruction preceded by a Roman numeral count towards the degree of B. S. All subjects preceded by a capital letter lead to a certificate.

### Agriculture.

PROFESSOR ADAMS, PROFESSOR MADISON, MR. BURDICK, MR. MALLETTE, MR. LAMBERT.

The instruction given in this subject is grouped under the three heads—agronomy, animal husbandry, and horticulture. The aim of these departments is to give such theoretical and practical training in the fundamentals of agriculture as will enable those who take this work to fill positions of trust and responsibility, either as owners of their own farms, managers of estates, or along other lines of agricultural activity.

That the graduates from this department may be fitted to take up the work as outlined above, all students registering for a degree in agriculture will be required to show a certain familiarity with the ordinary operations of the farm before such degree is given. In order that those students who come from the cities and towns, and are not familiar with the practical operations of the farms, may receive training in this work, opportunity for such instruction will be offered by the different departments during the college year. No college credits will be given for such work. As a rule, however, it will be much better for the students to spend one or two summers upon farms in order to get this training than to attempt to obtain the proficiency necessary by working only at the college during the college year. Persons taking practical work upon farms during the summer vacations will be required to furnish a certificate from their employers stating the time spent on the farm and the kind

and amount of work accomplished. Special attention must be given to that branch of agriculture which the student is electing in the regular course.

### AGRONOMY.

The instruction in agronomy begins in the first term of the Freshman year, when the fundamental operations which are conducted upon every farm are considered. Following this work, are subjects dealing with the various field crops and their uses as food for man and beast. The business side of farm life is given attention in the subjects treating of farm equipment and management. Work with farm machinery is a laboratory course, in which the students are taught how to care for, repair, and operate modern farm machinery. In the Senior year there is instruction in plant breeding, a subject which is of the utmost importance to one who would make the most of the opportunities in crop production. Instruction in agricultural experimentation deals largely with the application of the results which have been obtained by the experiment stations, to the practical problems of the farm.

The equipment of the department includes the college farm and barns; also the farm machinery, consisting of a good line of tillage implements, fertilizer distributors, grain drill, and harvesting machinery. A well-equipped blacksmith shop is also provided.

Students have the advantage of the field experiments which are being conducted by the experiment station upon fertilizer problems and with various rotations.

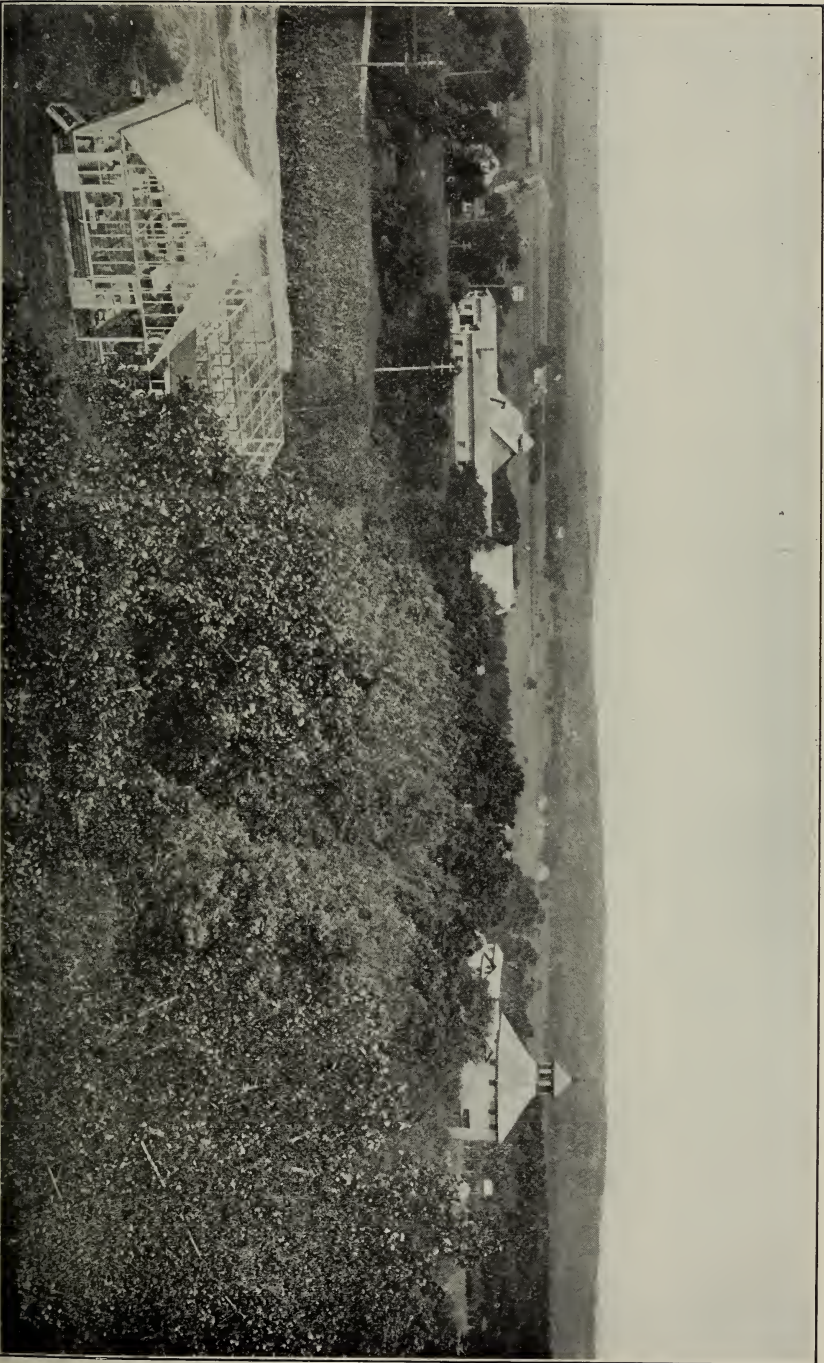
### Subjects.

I. Principles of Agriculture.—History of agriculture. Discussion of the general underlying principles which govern farm operations. *Two recitation credits per week, first term. Required of Freshmen in Agriculture.*

II. Forage Crops.—History and development of the plants used for forage; silage, methods of construction of silos. *Two recitation credits per week, first term. Required of Sophomores in Agriculture.*

III. Soils and Fertilizers.—Origin and constituents of soils; texture, moisture, drainage, methods of tillage. Farm manures, artificial manures, composition and use; formulas for various crops. *Three recitation and one laboratory credits per week, first term. Required of Juniors in Agriculture.*

IV. Farm Crops.—Origin and history; production and place in the rotation of clovers, grasses, and root crops. *Three recitation and one laboratory credits per week, second term. Required of Juniors in Agriculture.*



A VIEW TOWARD THE NORTHWEST.





V. Farm Equipment.—Selection and equipment of farms, buildings, fences, roads, water supply, farm power, machinery. *Two recitation credits per week, second term. Agronomy option for Juniors in Agriculture.*

VI. Farm Machinery.—Development of farm machinery, methods of construction, function, and operation. *Two recitation and one laboratory credits per week, second term. Agronomy option for Juniors in Agriculture.*

VII. Farm Management.—Discussion of agricultural methods, choice of a farm, capital, marketing, types of farming, accounts. *Two recitation credits per week, second term. Required of Sophomores in Agriculture.*

VIII. Farm Management (advanced).—Individual problems of farm management are assigned. Abandoned farms will be visited and a critical study made of the existing conditions. *Two recitation credits per week, first term. Agronomy option for Seniors in Agriculture.*

IX. Literature.—History of agricultural and horticultural literature; a study of the different types of agricultural literature as illustrated by ancient and modern authors. Reports upon special topics. *Two recitation credits per week, second term. Agronomy option for Seniors in Agriculture.*

X. Agricultural Experimentation.—Objects, methods, and results of agricultural experimentation. A study of federal and state aid to agriculture as shown in the work of the United States Department of Agriculture and the Experiment Stations. *Three recitation credits per week, first term. Required of Seniors in Agriculture.*

XI. Plant Breeding.—A discussion of the development of plants under cultivation; with reference to heredity, environment, variation, and selection. *Five recitation credits per week, second term. Required of Seniors in Agriculture.*

XII. Thesis. *Three credits per week throughout the year. Required of Seniors in Agriculture.*

A. Soils and Fertilizers.—An elementary course upon the origin and nature of soils. Fertilizers; natural and artificial manures; preparation and use; fertilizer arithmetic. *Three recitation and one laboratory credits per week, first term. Required of Short-Course students in Agriculture, second year.*

B. Crops and Rotations.—Methods of culture and uses of the grasses, clovers, cereals, and root crops. Rotation for the various types of farms. *Three recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.*

C. Farm Management and Accounts.—An elementary course upon the principles of farm management, equipment, and farm bookkeeping. *Three recitation credits per week, second term. Required of Short-Course students in Agriculture, first year.*

D. Farm Machinery.—Care and repair of farm implements. *Two laboratory credits for twelve weeks. Required of Short-Course students in Agriculture, second year.*



## ANIMAL HUSBANDRY.

Instruction in animal husbandry is so arranged as to furnish practical as well as theoretical training in the selection, care, and management of the live stock on the farm. Instruction commences with elementary stock judging, breeds, and care in the second term of the Freshman year. During the Sophomore year, instruction is given in poultry craft and dairy practice. These two subjects aim to provide a large amount of practical work in combination with the theoretical. In the Junior year, attention is directed to the breeding and feeding of animals; and in the Senior year the work includes judging, care of animals, and veterinary practice. In veterinary practice, the student is taught to diagnose and prescribe for the common ailments of farm animals.

The equipment is particularly strong on the poultry side. The college poultry plant enables one to obtain a large amount of practical experience in incubation, brooding, and management. In addition to the poultry in the college yards, the students have opportunity to follow the investigations with turkeys which are now being conducted by the experiment station.

In addition to the subjects mentioned below, there is a twelve weeks' course in poultry keeping during the winter months, full information concerning which may be obtained by addressing the president of the college.

### Subjects.

I. Stock Judging.—Scoring and comparison judging of the various types of horses, cattle, sheep, and swine. *Two laboratory credits per week, second term. Required of Freshmen in Agriculture.*

II. Advanced Judging.—Practice in judging and a detail study of animal conformation. *Two laboratory credits per week, first term. Required of Seniors in Animal Husbandry.*

III. Breeds.—History and characteristics of the principal breeds of farm animals. *Two recitation credits per week, second term. Required of Freshmen in Agriculture.*

IV. Principles of Breeding.—A study of the science and art of animal breeding. *Three recitation credits per week, second term. Required of Juniors electing Animal Husbandry.*

V. Management of Pure-Bred Herds, Flocks, and Studs.—Housing, feed, and management. Fitting animals for sale and for the show ring. *Two recitation credits per week, second term. Elective for Seniors in Animal Husbandry.*

VI. Feeding.—Principles of animal nutrition. Feeding standards. Rations. *Three recitation credits per week, first term. Required of Seniors in Agriculture.*

VII. Dairy Practice.—Lectures and laboratory practice with Babcock Test and in handling milk and making butter on the farm. *One recitation and one and one-half laboratory credits per week, first term. Required of Juniors in Agriculture.*

VIII. Dairy Practice.—Advanced work. Pasteurization. Starters. Testing for adulteration. Acidity. Moisture. *One recitation and one laboratory credit per week, second term. Required of Seniors electing Animal Husbandry.*

IX. Research and Literature.—A study of important results in live-stock research. Herd-book study. *Three recitation credits per week, first term. Required of Seniors electing Animal Husbandry.*

X. Veterinary Medicine.—Combating disease from the farmer's standpoint. Obstetrics. Injuries. *Three recitation credits per week, second term. Required of Seniors electing Animal Husbandry.*

XI. Farm Buildings.—Plans, location, and estimate on the various farm buildings. (See Mechanical Engineering, VII.) *Two laboratory credits per week, second term. Required of Juniors electing Animal Husbandry.*

XII. Poultry Craft.—A brief study of breeds, care, and management of all classes of fowls. *One laboratory credit per week, first term. Required of Sophomores in Agriculture.*

XIII. Judging Poultry.—Practice in scoring and judging all classes of fowls. *Two laboratory credits per week, second term. Elective for Seniors in Animal Husbandry.*

XIV. Thesis.—Original Investigation. *Three laboratory credits, both terms. Required of Seniors electing Animal Husbandry.*

A. Breeds and Care.—Breeds of horses, cattle, sheep, and swine. Housing, care, and management of farm animals. *Two recitation credits per week, first term. Required of Short-Course students in Agriculture, first year.*

B. Stock Judging.—Judging of the various classes of animals, and their adaptability for different purposes; as cattle for milk or beef production, horses for driving or draft. *Two laboratory credits per week, first term. Required of Short-Course students in Agriculture, first year.*

C. Dairy Practice.—Babcock Test for dairy products, production of sanitary milk and butter making. *One laboratory credit per week, second term. Required of Short-Course students in Agriculture, second year.*

D. Stock Feeding.—Principles of nutrition, compounding of rations. *Two recitation credits per week, second term. Required of Short-Course students in Agriculture, second year.*

E. Breeding and Veterinary Practice.—A study of the principles of breeding, selection, heredity, and variation. Methods of treating common diseases of farm animals. *Two recitation credits per week, second term. Required of Short-Course students in Agriculture, second year.*

F. Poultry Breeds and Care.—A study and comparison of the different breeds of poultry, care of incubators and brooders, methods of feeding for the production of meat and eggs. *One laboratory credit per week, second term. Required of Short-Course students in Agriculture, second year.*

## HORTICULTURE.

The aim of the instruction in horticulture is to help the student to understand the practical and scientific problems which arise in the various lines of work included under this subject.

The headquarters of the department are in the new horticultural building which was erected in 1906. The main building contains the office and recitation rooms, together with photographic rooms. Attached to this building are greenhouses of modern construction, containing over 8,000 square feet under glass, 3,000 square feet of which is used by the experiment station for fertilizer experiments. The remainder is devoted to college work, and thus affords an excellent opportunity to become familiar with the growth of plants under glass. The land devoted to the department comprises the college gardens; and the fruit orchards, containing over 150 varieties of fruit, which afford an excellent opportunity for the study of apples and pears especially. There is also a small vineyard. A collection of flowering shrubs enables the student in landscape gardening to study, in the natural state, the material used in this work.

### Subjects.

I. Propagation of Plants.—Seedage, methods of seed testing; cuttage, hard and soft wood cuttings; layerage and graftage. *One recitation and one laboratory credit per week, second term. Required of Freshmen in Agriculture.*

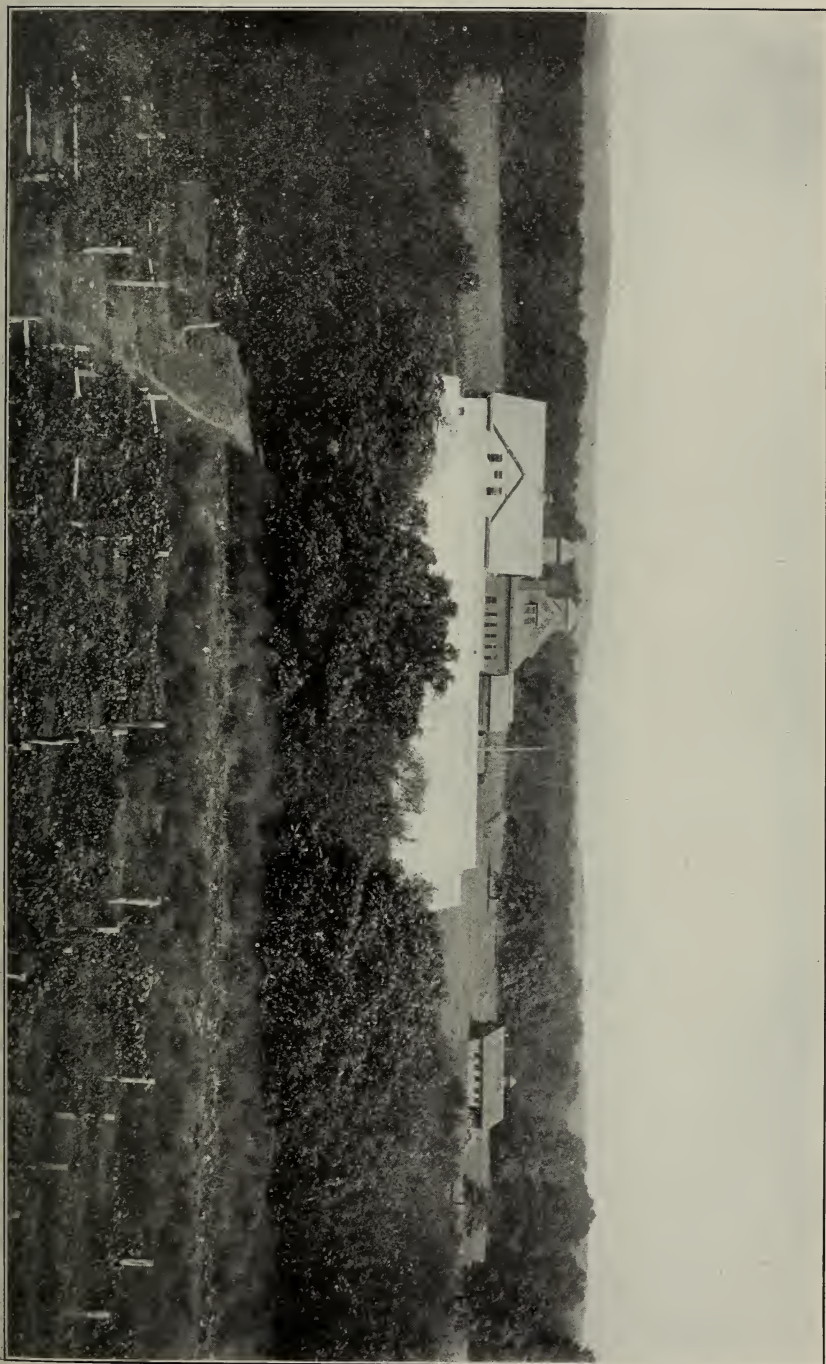
II. Vegetable Gardening.—Methods of growing and marketing vegetables. *Two recitation credits per week, second term. Required of Sophomores in Agriculture.*

III. Fruit Culture.—Principles and practice of orcharding and growing of bush fruits. *Two recitation credits per week, first term. Required of Juniors in Agriculture.*

IV. Spraying and Pruning.—Spray mixtures, preparation and use; fungicides; insecticides; spraying machinery; methods of pruning different classes of trees and shrubs. *One laboratory credit per week, second term. Required of Juniors in Agriculture.*

V. Greenhouse Construction and Management.—Construction and heating of greenhouses, preparation of plans, watering, ventilating. *One recitation and two laboratory credits per week, second term. Horticultural option for Juniors in Agriculture.*





HORTICULTURAL DEPARTMENT.





VI. Floriculture.—A study of greenhouse plants; annuals; herbaceous perennials; bulbs for bedding and forcing. *One recitation and one laboratory credit per week, second term. Horticultural option for Seniors in Agriculture.*

VII. Vegetable Forcing.—Methods of growing vegetables under glass; in houses, hotbeds, and cold-frames. *Two recitation credits per week, second term. Horticultural option for Juniors in Agriculture.*

VIII. Literature of Horticulture.—See Agronomy IX.

IX. Investigation.—Special problems upon subjects in which the student is particularly interested. *Horticultural option for Seniors in Agriculture.*

X. Varieties of Cultivated Fruits.—Classification and description of orchard fruits. *Two recitation and one laboratory credits per week, first term. Horticultural option for Seniors in Agriculture.*

XI. Advanced Vegetable Gardening.—Study of varieties for special purposes; market-garden rotations and equipment. *One recitation credit per week, first term. Horticultural option for Seniors in Agriculture.*

XII. Plant Breeding.—See Agronomy X.

XIII. Landscape Gardening.—The principles underlying landscape gardening as applied to the development of home grounds, school grounds, parks, cemeteries, and estates. *Four recitation credits per week, throughout the year. Horticultural option for Seniors in Agriculture.*

A. Vegetable Gardening.—Methods of growing vegetables; hotbed and cold-frame management; garden rotations. *Three recitation credits per week, second term. Required of Short-Course students in Agriculture, first year.*

B. Fruit Culture.—The location of orchards and fruit plantations; methods of tillage, pruning, spraying for insects and fungous diseases. Varieties for home and market. *Two recitation credits per week, throughout the year. Required of Short-Course students in Agriculture, second year.*

## Botany.

PROFESSOR MERROW.

The aim of the department is to give a general knowledge of plant life, followed by subjects of an economic nature. The college is well located for carrying on this line of work. The native flora is extensive, and an abundance of material is furnished by the cultivated plants of the gardens and fields of the college farm. The greenhouses supply fresh material for winter use, and the herbarium of 4,000 specimens is a useful reference collection. The laboratory is equipped with dissecting and compound microscopes, a microtome,

paraffin bath, and simple physiological apparatus. Charts and models are provided for lecture demonstrations. A good working library, including several American and foreign periodicals, is an important factor in the outfit for botanical instruction.

### Subjects.

I. General Botany.—A study of common plants, their structure, physiology, evolution, and adaptation to environment. The work includes a brief study of molds, yeasts, and bacteria, designed as an introduction to problems in which these organisms play a part. *Two laboratory credits and one recitation credit per week, throughout the year. Required of Freshmen in Agriculture, Applied Science, and Home Economics.*

II. Economic Botany.—The systematic botany of crops and weeds. *Two laboratory credits and one recitation credit per week, first term. Required of Sophomores in Agriculture, and Applied Science.*

III. Trees and Shrubs.—The determination of native and introduced trees and shrubs in summer and winter condition. *One laboratory or field credit per week, throughout the year. Required in a Horticultural option in the Agricultural course. May be elected by other students having a minimum of six credits in Botany.*

IV. Forestry.—*Two recitation credits per week, second term. Required of Juniors in Agriculture. Elective in Applied Science.*

V. Histology.—Seed plants are studied by the usual histological methods of imbedding, sectioning, and staining. *Two and one-half laboratory credits and one recitation credit per week, first term. Required in the options A and B, Senior year, course in Agriculture.*

VI. Pathology.—Diseases caused by parasitic fungi and the remedies for them. *Two and one-half laboratory credits and one recitation credit per week, second term. Required in the options A and B, Senior year, course in Agriculture.*

VII. Botanical Literature.—Current literature of periodicals, and bulletins of the U. S. Department of Agriculture and Experiment Stations. *One recitation credit per week, throughout the year. Elective for students with a minimum of nine credits in Botany. This subject may be elected more than once.*

VIII. Special Botany.—Advanced Histology or Pathology may sometimes be given, if applied for.

A. Plant Life.—Elementary Agricultural Botany. *Two laboratory credits and one recitation credit per week throughout the year. These credits count for entrance to the college courses, and for a certificate in the Short-Course in Agriculture. Required in the first year of the Sub-Freshman Course, and of the Short-Course in Agriculture.*

## Chemistry.

DR. LEIGHTON, MR. HUNTLEY.

Instruction in this department begins in the Freshman year with experimental lectures, recitations, and laboratory practice in general and descriptive chemistry. As much attention as is practicable in a general course is given to the applications of the science to the problems of life. Qualitative analysis extends through one term of the Sophomore year, a portion of the time being devoted to lectures and recitations, but the greater part to practical work in the laboratory. The above subjects are required of all candidates for a degree, as essential to a liberal education, and are preparatory to the subsequent subjects which are designed for students desiring to make chemical engineering their profession.

An elementary course in organic chemistry is required during the second term of the Sophomore year of students in chemical engineering, home economics, and the teachers' course in applied science. The department also affords opportunity for further work in organic chemistry, quantitative analysis, industrial chemistry, gas analysis, assaying, agricultural chemistry, mineralogy, blowpipe analysis, and metallurgy.

The laboratory is supplied with water, gas, and compressed air at each desk; it is also thoroughly equipped with apparatus for the subjects mentioned below. Among the more important pieces of apparatus are a polariscope, microscope, sodium press, hot-air engine, five analytical balances, one assay balance, filter press, Wheatstone bridge, combustion furnace, bomb furnace, assay muffle, crucible and roasting furnaces, ore crusher and grinder. The chemical reference library contains a complete set of the *Journal of the Chemical Society*, *Zeitschrift für Physikalische Chemie*, *Zeitschrift für Anorganische Chemie*, *Berichte der deutschen chemischen Gesellschaft*, *Chemisches Centralblatt*, the *Metallographist* and *Iron and Steel Magazine*, *Watt's* and *Thorpe's* dictionaries, *Beilstein's Handbuch der Organischen Chemie*, *O. Dammer's Handbuch der Anorganischen Chemie*, *Richter's Lexikon der Kohlenstoff-Verbindungen*, *Allen's Commercial Organic Analysis*, and over one hundred and sixty volumes of smaller works covering general analytical, organic, physical, and physiological chemistry.

## Subjects.

I. General Chemistry.—*Two recitation and one and one-half laboratory credits per week, first term. Required of Freshmen in all courses.*

II. General Chemistry.—*Two recitation and one and one-half laboratory credits per week, second term. Required of Freshmen in all courses.*

III. Qualitative Analysis.—*Basic and acid analysis; analysis of salts, industrial and natural products. Three laboratory credits per week, first term. Required of Sophomores in all courses.*

IV. Organic Chemistry.—*Three recitation and one laboratory credits per week, second term. Required of Sophomores in Chemical Engineering, Home Economics, and Applied Science. Elective for others who have completed Chemistry III.*

V. Organic Chemistry (advanced).—*Three recitation credits per week, first term. Required of Juniors in Chemical Engineering. Elective for others who have completed Chemistry IV.*

VI. Organic Chemical Laboratory.—*Four laboratory credits per week, second term. Required of Juniors in Chemical Engineering. Elective for others who have completed Chemistry V.*

VII. Quantitative Analysis.—*Gravimetric and Volumetric Analysis. Analysis of minerals, ores, alloys, and industrial products. Six laboratory credits per week, first term; six laboratory credits per week, second term. Required of Juniors in Chemical Engineering. Elective for others who have completed Chemistry III.*

VIII. Quantitative Analysis.—*Like VII, but requires less time. Four laboratory credits per week, first term; four and one-half laboratory credits per week, second term. Elective for those who have completed Chemistry III.*

IX. Quantitative Analysis.—*Continuation of course VII. Four laboratory credits per week, first term. Required of Seniors in Chemical Engineering. Elective for others who have completed Chemistry VII or VIII.*

X. Quantitative Analysis.—*Food Analysis. Two laboratory credits throughout the year. Required of Seniors in Home Economics. Elective for others who have completed Chemistry IV.*

XI. Determinative Mineralogy.—*One and one-half laboratory credits per week, second term. Required of Juniors in Chemical Engineering. Elective for others who have completed Chemistry III.*

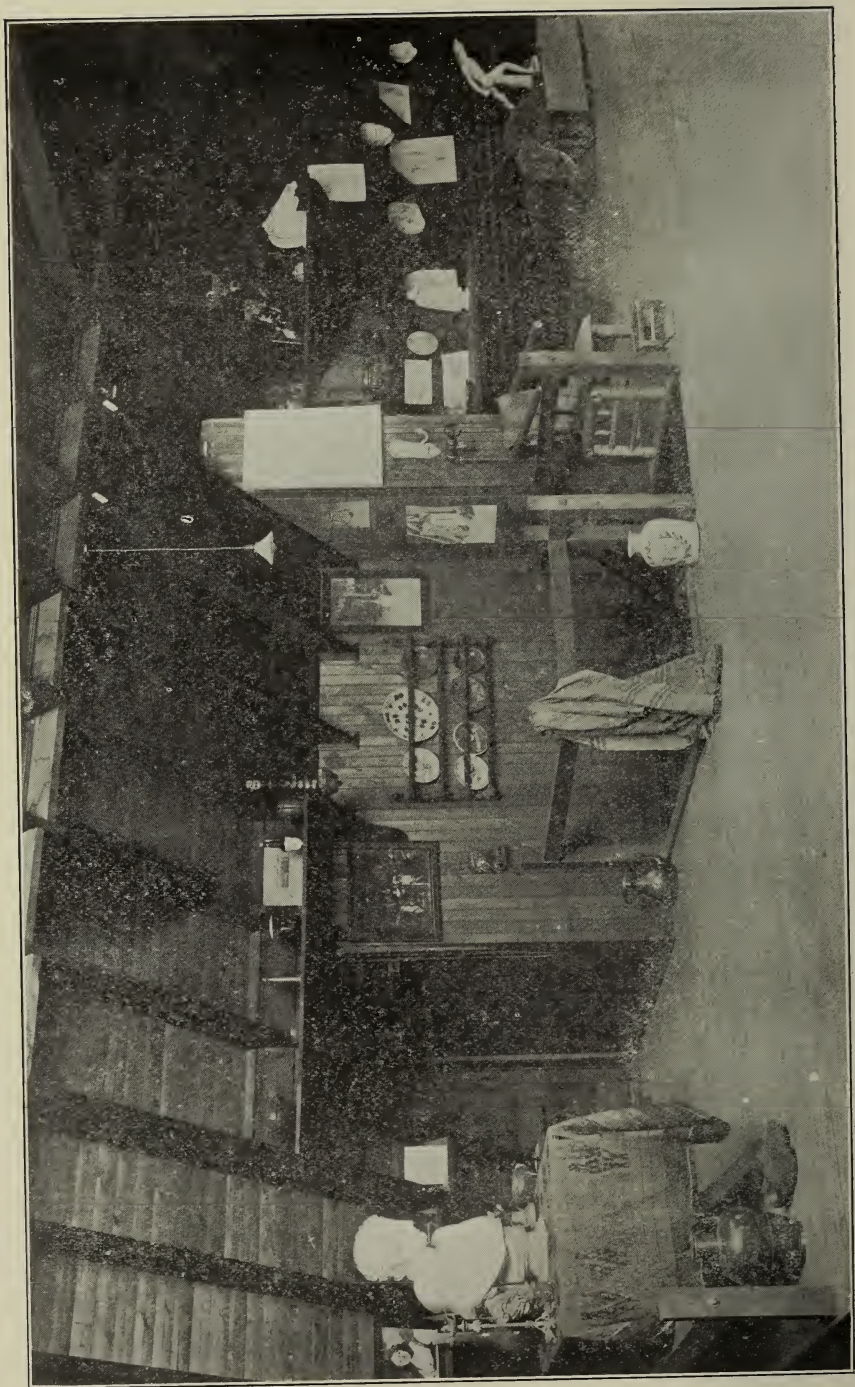
XII. Physical Chemistry.—*Three recitation and one laboratory credits per week, first term. Required of Seniors in Chemical Engineering. Elective for others who have completed Chemistry III.*

XIII. Metallurgy.—*Two recitation credits per week, first term. Required of Juniors in Electrical, Civil, and Mechanical Engineering, and Seniors in Chemical Engineering. Elective for others who have completed Chemistry II.*

XIV. Agricultural Chemistry.—*Three recitation and one laboratory credits, first term. Required of Juniors in Agriculture.*







THE STUDIO.

XV. Gas Analysis.—*One and one-half laboratory credits per week, second term. Required of Seniors in Chemical Engineering. Elective for others who have completed Chemistry III.*

XVI. Industrial Chemistry.—*Four recitation credits per week, second term. Required of Seniors in Chemical Engineering. Elective for others who have completed Chemistry IV.*

XVII. Industrial Chemistry.—*The work under this subject may be varied to suit the needs of individual students; including such subjects as technical analysis and textile coloring. Three laboratory credits per week, second term. Required of Seniors in Chemical Engineering. Elective for those who take Chemistry XVI.*

XVIII. Assaying.—*Three laboratory credits per week, second term. Required of Seniors in Chemical Engineering.*

XIX. Physiological Chemistry.—*Two exercises per week throughout the year. Required of Juniors in Home Economics.*

XX. Thesis.—*Required of Seniors in Chemical Engineering and those who take the Chemical option in Applied Science.*

A. Chemistry of Plant and Animal Life.—*Three recitation and one laboratory credits per week. Required of Short-Course students in Agriculture, second year.*

## Freehand Drawing.

MISS ELDRED.

The aim of the subjects described below is to supply the practice in drawing necessary for subsequent work in the drafting-room and the science laboratories, and to give some knowledge of the elements of art and some appreciation of the beautiful in art and nature. The work for the first term of the Freshman year is designed to meet the later requirements of mechanical and scientific drawing. The engineering students, after short practice in freehand lettering, spend the remainder of the term in pencil outline drawing, paying especial attention to the subject of freehand perspective, as illustrated by geometrical models and other objects. In the agriculture and science courses, the work of the first term comprises outline drawing in pencil from plant and animal forms. The work of the second term in the science courses is planned upon broader lines, and includes, especially for the course in home economics, some attention to the principles of design. In the following year the students in this course take up during the second term the consideration of color,—the principle of color harmony and the use of color in design and decoration.

The object of this work is to develop appreciation of color and to enable the student to exercise a more intelligent and sensitive discrimination in its use. The subject, history of art, aims to give some familiarity with the greatest achievements of past and present in architecture, sculpture, and painting. Following this general survey, the students in home economics give special consideration to the history of domestic architecture, where it is hoped they may find standards of dignity, simplicity, and fitness to which many of the problems of to-day in the same field may well be referred. These latter subjects are given mainly by means of lectures and the study of casts and photographs. The department has a considerable equipment of illustrative material of this kind, including a collection of about one hundred and fifty casts and over three hundred photographs of folio or larger size, with many smaller prints, among them the five hundred University Prints of Greek and Roman sculpture.

### Subjects.

I. Freehand Lettering: Pencil Drawing from Objects.—*Two laboratory credits per week, first term. Required of Freshmen in Engineering and of Short-Course Engineers.*

II. Pencil Drawing from Objects.—*One laboratory credit per week, first term. Required of Freshmen in Agriculture. Two laboratory credits per week, first term. Required of Freshmen in Applied Science. One laboratory credit throughout the year. Required of Freshmen in Home Economics. Two laboratory credits per week, second term. An option for Freshmen in Applied Science. An option for Sub-Freshmen; one laboratory credit throughout the year.*

III. History of Art.—*Two credits per week, first term, one credit per week second term. Required of Sophomores in Home Economics.*

IV. Color Problems.—*One laboratory credit per week, second term. Required of Sophomores in Home Economics.*

V. Drawing in Charcoal from Still Life and the Cast.—*Two laboratory credits per week, second term. Elective.*

VI. Pen-and-Ink Drawing, Water-Color, or Pastel.—*Two laboratory credits per week, second term. Elective.*

VII. Modeling.—*Two laboratory credits per week, second term. Elective.*



## Economic and Social Science.

PRESIDENT EDWARDS.

### Subjects.

I. Political Economy.—Text-book, supplemented by lectures, readings, and essays. The first term is devoted to the general principles of the subject; second term, to consideration of present-day problems. *Five recitation credits per week, first term, first twelve weeks. Required of Seniors in all courses.*

II. Agricultural Economics.—The study of agriculture as an industry, from the point of view of political economy. Includes a study of the agricultural market; transportation of agricultural products; agricultural labor; farm ownership and tenancy; mortgages, etc. *Elective. President Edwards.*

III. Rural Sociology.—Movements of the farm population—causes and results; general social conditions of farmer, such as illiteracy, health, crime, etc.; personal and social traits developed by rural life; means of communication in rural communities; the rural school; agricultural education; the country church; farmers' organizations, federation of rural social forces. *Elective. President Edwards.*

## Home Economics.

PROFESSOR JOHNSON.

The aim of this department is to give both theoretical and practical training in the economic administration of the home. The laboratory is situated in a building by itself, which is finished and furnished in such a manner as to demonstrate the sanitary principles involved in proper kitchen arrangements. It is amply equipped with the most recent scientific cooking-apparatus, inclusive of thermometers, metric scales, different kinds of stoves, and individual utensils. The work in chemistry, biology, etc., is, however, carried on in the laboratories of those departments. There is a good home-economics library, and students are expected to make intelligent use of the main library in reference work, as well as to study those bulletins of the Department of Agriculture and such state reports as deal particularly with the subjects of food and nutrition.

### Subjects.

I. House Construction, Sanitation, and Cost.—A study of the house, its construction, situation, and surroundings; heating, lighting, ventilation, water supply, and drainage. *Two recitation and one-half laboratory credits, first term. Required of Freshmen in Home Economics. Open to all college students.*

II. Principles of Selection and Preparation of Food.—The nature and uses of food; its chemical composition, and the changes effected by heat, cold, and fermentation. Methods by which heat is applied to food; study of fuels and cooking-apparatus. *Two laboratory and two recitation credits per week, second term. Required of Freshmen in Home Economics. Prerequisite; Chemistry I.*

III. Household Hygiene.—Cleansing processes; cleaning and care of house, food, and food supplies. Application of bacteriology to care of house and food. *One recitation and one-half laboratory credits per week, second term. Required of Freshmen in Home Economics. Prerequisite; first term Biology I.*

IV. Economic Uses of Food.—Continuation of Subject II, with emphasis on the economic side of the food question. Production, manufacture, and preparation of staple foods; factors affecting cost. *Three laboratory and two recitation credits per week, first term. Required of Sophomores in Home Economics. Prerequisites; Chemistry I, Biology I.*

V. Personal Hygiene.—This course considers the aim of personal hygiene as the maintaining of the most efficient human machine for the life needs of the individual. It endeavors to give and establish ideals of health and efficiency. Includes instruction in first aid to the injured. *One recitation credit per week, throughout the year. Required of Sophomores in Home Economics and of all women Freshmen in other courses.*

VI. Home Decoration.—Continuation of Subject I. A study of the evolution of the house; its adaptation to modern conditions; takes up the principles to be followed in planning, furnishing, and decorating the house from a sanitary and artistic standpoint. *Two recitation credits per week, second term. Required of Sophomores in Home Economics.*

VII. Dietetics.—Principles of diet; relation of food to health; adaptation of food to age, sex, and occupation. *Two laboratory credits per week, second term. Required of Sophomores in Home Economics. Prerequisite; Home Economics II and IV.*

VIII. Food Supplies and Dietaries.—Nutritive and money values of food stuffs; construction of dietaries; adulterations; methods of preservation, etc. *One laboratory and two recitation credits per week, first term. Required of Juniors in Home Economics. Prerequisites; Home Economics VI, Chemistry III and IV.*

IX. Public Hygiene.—Takes up such phases of the subject as have a direct practical bearing on public health and principles of individual and social hygiene. An application of bacteriology to municipal hygiene, water, and food supplies, sewage disposal, etc. *One recitation credit per week, first term. Required of Juniors in Home Economics. Prerequisite; Biology I. Open to all Juniors and Seniors.*

X. Textiles.—A study of fabrics; processes and appliances studied with reference to their historic development; primitive industries; modern processes of manufacture; experimental and laboratory work; dyeing, spinning, and weaving. *Two recitation credits per week, second term. Required of Juniors in Home Economics. Prerequisite; first term of History I.*



XI. Child Hygiene.—A study of the physical development of children; care of infants and young children; school hygiene. *Two recitation credits per week, second term. Required of Juniors in Home Economics. Prerequisite; Psychology. Open to Juniors and Seniors in other courses.*

XII. Household Art.—Theory of color and its use in the home; effect of different textiles and their economic use; materials suitable for various uses in the home, and their hygienic properties. *Two recitation credits per week, first term. Required of Seniors in Home Economics. Prerequisites; Freehand Drawing IV, Home Economics I, VI.*

XIII. A Study of the Family.—Development of the domestic institutions; social ethics of the family; legal, industrial, and educational problems of the household. *Two recitation credits per week, first term. Required of Juniors in Home Economics. Open to Juniors and Seniors in other courses.*

XIV. Household Administration.—A study of the administration of the home inclusive of proper apportionment of income and maintenance of suitable standards. *Three recitation credits per week, second term. Required of Seniors in Home Economics. Prerequisite; Economics I.*

XV. History of Home Economics.—Development of home-economics movement; a study of the work as presented in different types of institutions, and its industrial, educational, and sociologic aspects. *Two recitation credits per week, second term. Required of Juniors in Home Economics. Option A. Open to special students.*

XVI. Teaching of Home Economics.—Purpose and method of the work; courses of study, equipment, etc. *One recitation credit per week, first term. Required of Seniors in Home Economics. Option A.*

XVII. Thesis.—This may be a problem in the biological, chemical, physiological or economic aspect of the work in Home Economics. *Three credits throughout the year. Required of Seniors in Home Economics.*

#### DOMESTIC SCIENCE.

A. Household Technique.—This course is planned to give a knowledge of the processes involved in household work. It deals with the handwork of cooking and cleaning; care of rooms; table setting and serving, etc. *Two and one-half laboratory and one recitation credits per week, throughout the year. Required of Short-Course students.*

B. Care of the House.—Principles of housework; labor-saving appliances; how to clean the house and its furnishings; repairing—the use of varnishes, paints, etc., and how to care for finished surfaces. *One laboratory and two recitation credits per week, second term. Required of Short-Course students.*

C. A Study of the Modern American Home.—Its development, the development of its industries; how its comfort, beauty, and surroundings may be improved. *Two recitation credits per week, second term. Required of Short-Course students.*

D. Foods.—Provides instruction in advanced cooking; special cooking for sick and convalescent; planning of meals; discusses food for different ages and conditions. *Two laboratory credits per week, throughout the year. Required of Short-Course students.*

E. Management of the House.—Considers the materials, qualities, amounts, and cost of house furnishing and supplies; lessons in marketing. *Three recitation credits, throughout the year. Required of Short-Course students.*

F. Hygiene.—Study of the living machine, its mechanism and functions; the right use and proper care of the human mechanism; home nursing and emergencies. *Two recitation credits per week, throughout the year. Required of Short-Course students.*

### EDUCATION.

I. History of Education.—Study of the educational ideas and practices of the historical periods as a basis for the interpretation and appreciation of the essential features of modern education. *Three recitation credits per week, first term. Required of Juniors in Home Economics. Option A.*

II. Principles of Education.—The meaning and aim of education; modern educational theories; the biological, physiological, and psychological aspects of education. *Two recitation credits per week, second term. Required of Juniors in Home Economics. Option A.*

III. Methods in Education.—Discussion of the organization and problems of the school; influence of personality of teachers; methods of teaching and study; considerations of subjects of study. *Two recitation credits per week, first term. Required of Seniors in Home Economics. Option A.*

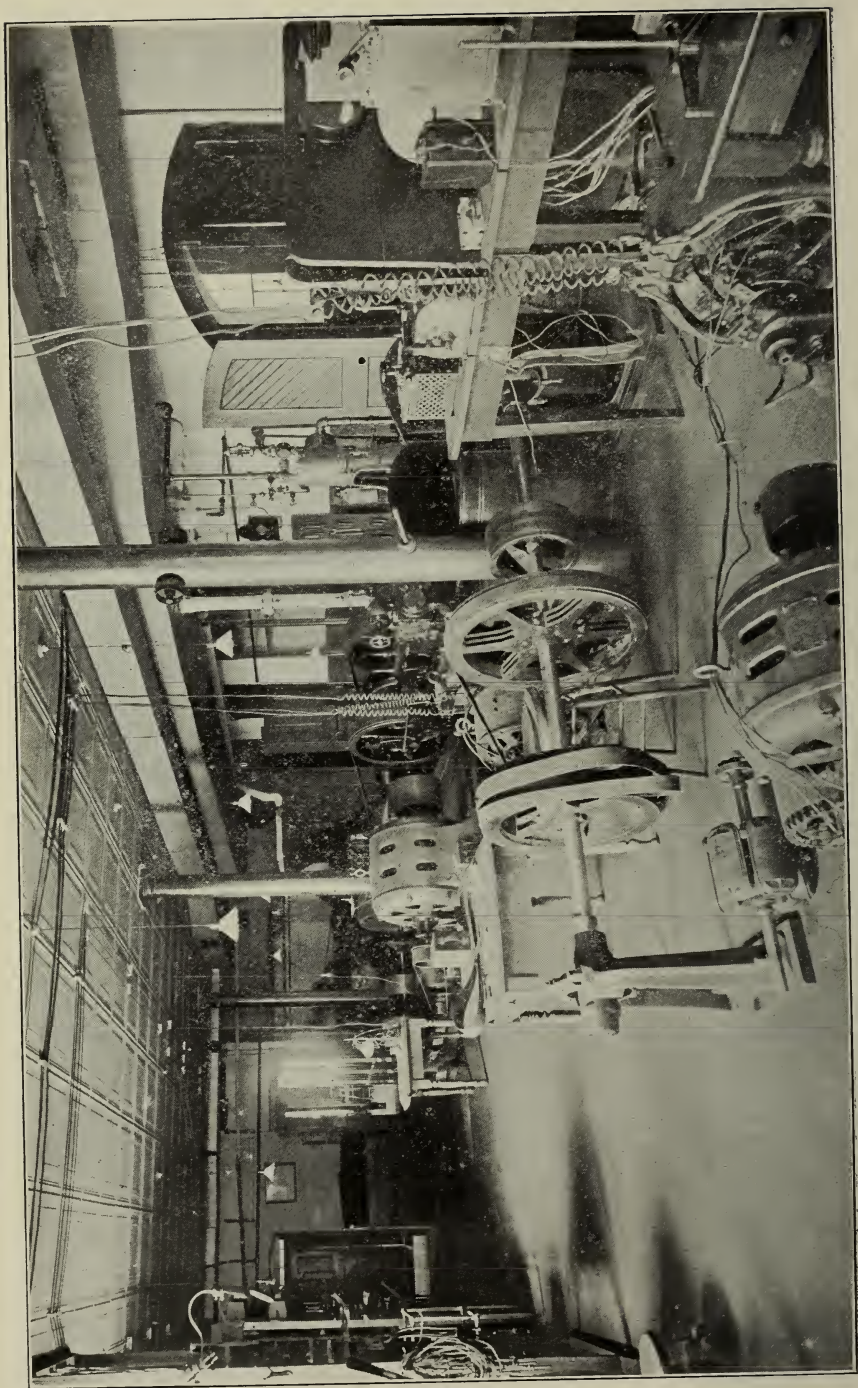
IV. Practicum.—Applied methods of teaching based on actual operations of class and observation work. Practice teaching in different classes. Hours arranged. *Four credits, second term. Required of Seniors in Home Economics. Option A.*

## Mechanical Engineering.

PROFESSOR DRAKE, MR. T. C. RODMAN, MR. CHITTENDEN.

Instruction in the fundamental theories of engineering is given by means of text-books, lectures, and reference reading. Laboratory work is required in mechanical drawing, woodworking, forging, machine shop, strength of materials, steam engineering, and engineering tests. The shops are exceptionally well equipped, and the nature of the work done is such as to give the student a fair degree of manual skill and to illustrate the operations of present-day shop practice. The production of power by use of the steam





'ELECTRICAL LABORATORY,'



or gas engine receives marked attention, the power plants and the college pumping-station furnishing opportunities for practical tests.

Features of the equipment for the instruction outlined are as follows. The mechanical-drawing room contains twenty individual benches with drawers and cupboard for instruments and drawing boards. There are also the usual facilities for blue printing. The carpenter shop is provided with benches for twenty students. Each bench is furnished with a set of bench tools. For more extended work, a well-stocked toolroom provides extra tools as may be required. The wood-machinery shop contains twelve wood-turning lathes, circular saw, band-saw, jig-saw, surface and buzz planers. The pattern-making section will accommodate from six to ten students at one time. The forge shop contains twelve forges with anvils, hammers, tongs, stock cutter, and other tools. The machine shop is equipped with six metal lathes, speed lathes, planer, 16" shaper, two drills, two tool grinders, drill grinder, universal grinder, milling machine, punching press, vertical boring and turning mill, vises, benches, etc. The toolroom is supplied with a large stock of drills, reamers, taps, files, calipers, wrenches, and other small tools. For experimental engineering the department has in use a 50,000-pound Olsen tension and compression machine, a 600-pound cement tester, steam-engine valve model, steam-gauge tester, carpenter calorimeter, hot-air engine, gauges, thermometers, indicators, planimeters, water meters, and other apparatus.

### Subjects.

I. Mechanical Drawing.—Elementary principles, use of tools, geometrical problems, projections, screw threads, bolts and nuts, machine parts. *Three laboratory credits, second term. Required of Freshmen in Engineering. One and one-half laboratory credits, second term. Required of Freshmen in Agriculture.*

II. Mechanical Drawing.—Machine details, tracing, blue printing. *Two and one-half laboratory credits, first term. Required of Sophomores in Engineering.*

III. Mechanical Drawing.—Descriptive Geometry of the point, line, plane, and geometrical solids. Intersection of solids, development of surfaces, oblique projection, isometric projection. *Three recitation credits, second term. Required of Sophomores in Engineering.*

IV. Mechanical Drawing.—Machinery design. *Three laboratory credits, throughout the year. Required of Seniors in Mechanical Engineering.*

V. Architectural Drawing.—Plans for dwellings. Lectures on the design and construction of the modern American home. *Two laboratory credits, first term. Elective in Home Economics.*



VI. Poultry House Construction.—Practical work in designing the various buildings for a poultry plant. Estimates of materials, fixtures, and costs. *Elective for Seniors in Agriculture.*

VII. Farm Buildings.—Plans, estimates, bills of material, specifications, costs. *Two credits, first term. Elective for Seniors in Agriculture.*

VIII. Shop Practice.—Woodworking, benchwork, use of tools, carpentering. *Three shop credits, first term. Required of Freshmen in Engineering. Two shop credits, second term. Required of Sophomores in Agriculture and Freshmen in Applied Sciences.*

IX. Shop Practice.—Woodturning in soft and hard woods. *Three shop credits, eight weeks, second term. Required of Freshmen in Engineering.*

X. Shop Practice.—Pattern-making and principles of molding. Patterns are made for some machine designed in the drafting room. *Five shop credits for nine weeks, second term. Required of Sophomores in Mechanical Engineering.*

XI. Shop Practice.—Forging, drawing, bending, welding, and tool dressing. *Three shop credits, ten weeks, second term. Required of Freshmen in Engineering.*

XII. Shop Practice.—Forging for students in agriculture. Iron work for farm requirements. Repairing of farm machinery. *One shop credit, second term. Required of Juniors in Agriculture.*

XIII. Shop Practice.—Machine Shop. Hand work in chipping, filing, scraping, and finishing. Use of machine tools. Machine construction. *Two recitation and three shop credits for nine weeks, second term. Required of Sophomores in Mechanical Engineering. Three shop credits, second term. Required of Sophomores in Electrical Engineering. Three shop credits, throughout the year. Required of Juniors in Mechanical Engineering.*

XIII a. Shop Practice.—Machine-shop work for students in agriculture. Chipping and filing, tapping and cutting threads, drilling, machine work, and pipe fitting. *One and one-half shop credits, first term. Required of Juniors in Agriculture.*

XIV. Woodcarving.—Care and use of tools, geometrical motives, diaper patterns, incised carving, flat and curved surfaces, historic ornament, low and high relief. *Elective for students in Home Economics and Applied Science.*

XV. Steam Boilers.—Types, construction, strength, uses, and management. *Three recitation credits, six weeks, first term. Required of all Juniors in Engineering.*

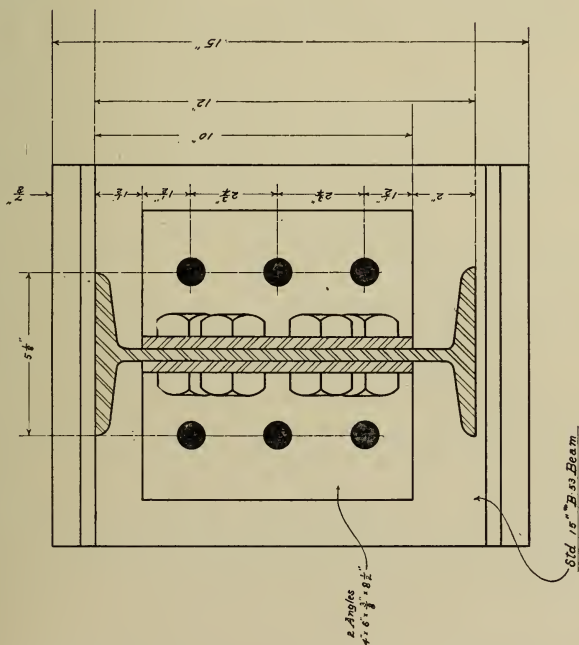
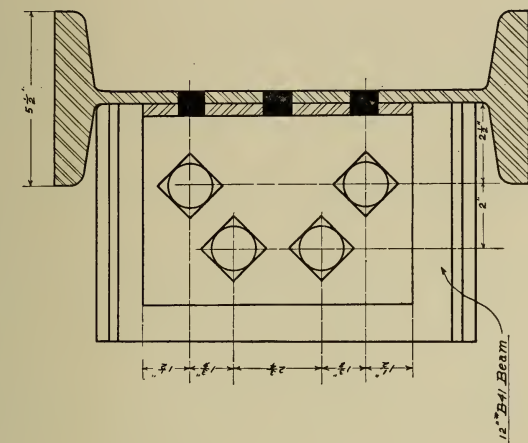
XVI. Thermodynamics.—Fundamental principles and formulæ. Direct applications to steam and gas engines. *Three recitation credits, twelve weeks, first term. Required of Juniors in Mechanical, Electrical, and Civil Engineering.*

XVII. Steam Engines.—Types, valve gears, regulators, turbines, power plants, tests. *Three recitation credits, second term. Required of all Juniors in Engineering.*

XVII a. Gas Engines.—Internal combustion motors for gas, gasoline, alcohol, and oils; gas producers, ignition, and governors. *Three recitation credits, second term. Required of Juniors in Mechanical Engineering.*







# BEAM CONNECTIONS





XVIII. Strength of Materials.—Text-book study of the theory of the strength of rods, pipes, cylinders, beams, columns, shafts, and simple framed structures. Laboratory tests of wood, iron, steel, alloys, brick, stone, and cements. *Three recitation and two laboratory credits, last six weeks of first term and first six weeks of second term. Required of Seniors in Mechanical, Highway, and Chemical Engineering.*

XIX. Theoretical Mechanics.—The mechanics of bodies at rest and in motion. Friction of rest and of motion. Energy, work, and power. Elements of graphic statics. Illustrations are made by the use of many common problems from engineering practice. *Five recitation credits, first twelve weeks, first term. Required of all Juniors in Engineering.*

XIX a. Elementary Mechanics.—Introductory to advanced courses. *Two recitation credits, second term. Required of Sophomores in Mechanical, Electrical, and Civil Engineering.*

XX. Mechanism.—Analysis of motions in machines. Practical mechanism of gears, cams, bearings, shafting, pulleys, belts, ropes, and chain drives. *Three recitation credits, twelve weeks, first term. Required of Juniors in Mechanical Engineering.*

XXI. Hydraulics.—Flow of water through pipes and orifices, and over weirs. Discharge of sewers, rivers, and streams. Water wheels and water power. *Five recitation credits, last twelve weeks, second term. Required of all Juniors in Engineering.*

XXII. Heating and Ventilation.—General principles of heating by means of steam, hot air, and hot water. Computations of heating surface. Heating systems for shops and mills. *Three recitation credits, six weeks, first term. Required of Juniors in Mechanical Engineering.*

XXIII. Mill Construction.—Lectures upon the structural development of industrial buildings. The subjects of foundations, walls, floors, roofs, lighting, fire protection, and sanitary features are taken up and thoroughly discussed. *Three recitation credits, ten weeks, first term. Required of Seniors in Mechanical Engineering.*

XXIII a. Mill Equipment.—Lectures treating of the general equipment of a manufacturing plant with the necessary power and power transmission machinery, repair shops, and machine tools. A course can be given, if required, pertaining to the installing of textile machinery. *Three recitation credits, eight weeks, first term. Required of Seniors in Mechanical Engineering.*

XXIV. Contracts, Specifications and Business Law.—Lectures intended to present the subject as an aid to the constructive engineer. *Three recitation credits, two weeks, second term. Required of Seniors in Mechanical Engineering.*

XXV. Industrial Economics. — Management of shops, drafting-room methods, tool-room systems, card records for time keeping, stock, and cost of manufacturing, advertising and sales department. *Three recitation credits, sixteen weeks, second term. Required of Seniors in Mechanical Engineering.*

XXVI. Engineering Tests.—Practical testing of engines, boilers, pumps, machinery, fuels, and materials used in engineering work. *Two recitation and three laboratory credits, throughout the year. Required of Seniors in Mechanical Engineering.*

A. Drawing.—Freehand sketching of machine parts, projections, lettering, use of instruments, geometrical problems, machine-drawing tracing, and blue printing. *Three laboratory credits per week, throughout the year. Required of Short-Course students in Engineering, first year. One laboratory credit per week, throughout the year. Required of young men in Sub-Freshman course, first year.*

B. Shop Practice.—The Short-Course Engineering student elects work in carpentering, machine shop, or machine drafting. *Four and one-half shop credits per week, first term; three shop credits per week, second term. Required of Short-Course students in Engineering, first year.*

C. Shop Practice.—Carpentry, machine shop, machine drafting, or steam engineering. The student continues in the same line of work as was chosen the first year, except that those who are to take steam engineering, now substitute it in place of the machine shop. *Four and one-half shop credits per week, throughout the year. Required of Short-Course students in Engineering, second year.*

D. Machine Tools.—A study of the types and principles of operations of the machine tools to be found in a machine shop. Text-books, lectures, and reference reading. *Three recitation credits per week, throughout the year. Required of Short-Course students in Engineering, first year.*

E. Engineering Theory.—Properties of material, fuel, lubricants, steam engines, boilers, gas engines, mechanism, practical electricity, shop methods. *Five recitation credits per week, throughout the year. Required of Short-Course students in Engineering, second year.*

F. Carpentry.—A brief course in use of tools and joinery. *One shop credit per week throughout the year. Required of young men in Sub-Freshman course, second year.*

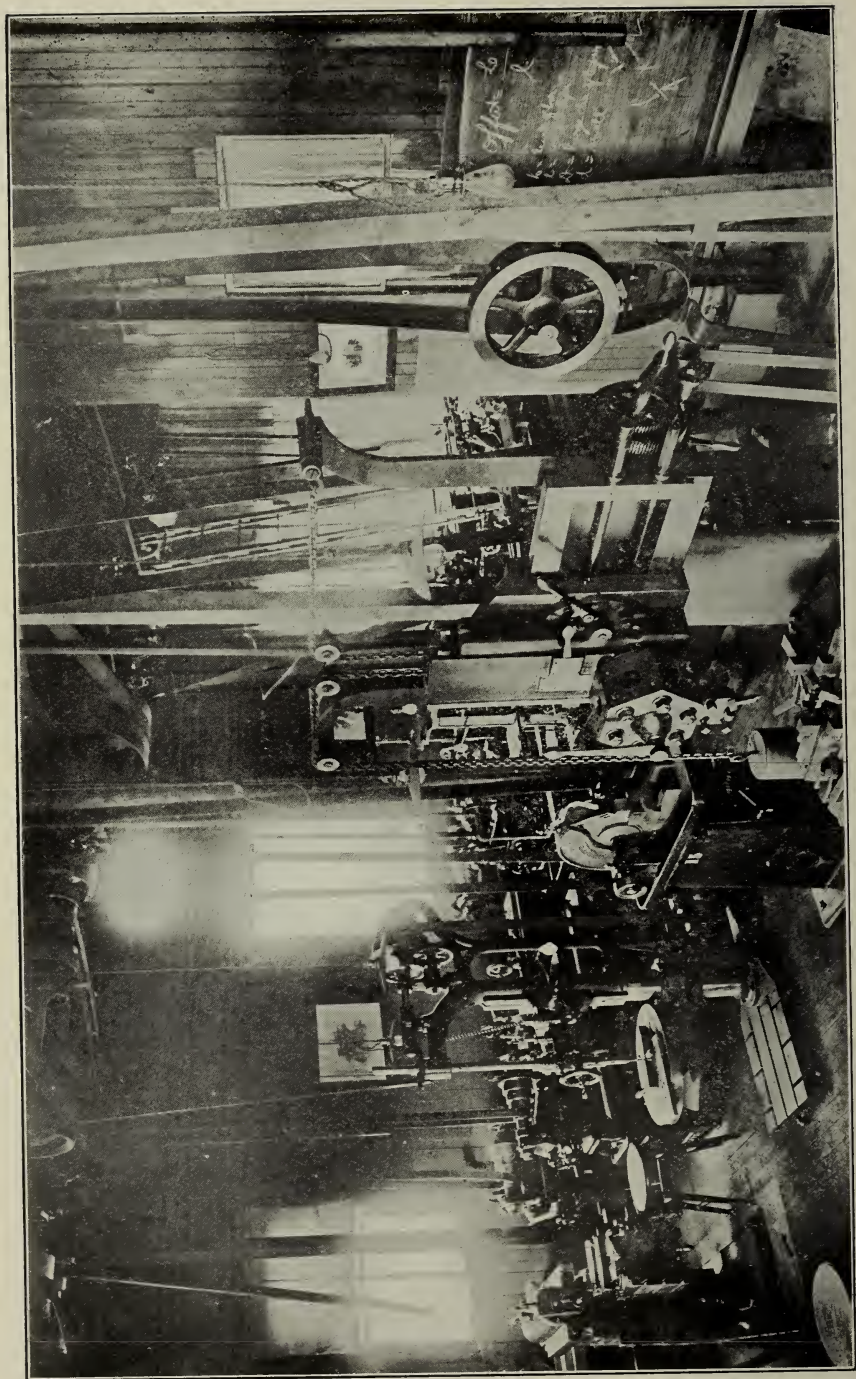
G. Woodcarving.—*One laboratory credit per week, throughout the year. Required of young women in Sub-Freshman course, second year.*

H. Farm Buildings.—A practical course in the planning of farm structures, estimating quantities of material required, and costs. *One shop credit per week, first term; one and one-half shop credits, second term. Required of Short-Course students in Agriculture, first year.*

I. Shopwork.—Woodworking at the bench and lathe. *One and one-half shop credits per week, throughout the year. Required of Short-Course students in Agriculture, first year.*

J. Forging and Machine Shop.—*Two shop credits per week for twenty-four weeks. Required of Short-Course students in Agriculture, second year.*





MACHINE SHOP.



## Electrical Engineering.

PROFESSOR TOLMAN, MR. W. S. RODMAN.

The aim of the course in electrical engineering is to give to a student pursuing it a satisfactory knowledge of the fundamental principles of the subject, and, building upon these, to acquaint him with the practical application of them to electrical machinery and to the distribution of electricity for lighting, railroads, and power purposes.

The department is prepared to make laboratory tests of electrical machinery, and the time given to practical work is a large part of that required in the course.

### Subjects.

I. Theory of Direct Current Machinery.—A detailed study of the theory of direct current apparatus. The theory, use, care of the dynamo. *Three recitation credits per week for thirty weeks. Required of all Juniors in Electrical Engineering.*

II. Direct Current Laboratory.—A course following Physics V and consisting of tests of various types of direct current apparatus. These include magnetization and characteristic curves of different types of machines. Efficiency, regulation, temperature, and other tests are included in this course. *Three laboratory credits per week for twenty-one weeks. Required of Juniors in Electrical Engineering.*

III. Storage Batteries.—A course of lectures on the theory, care, and operation of storage batteries. *Three recitation credits per week for six weeks, second term. Required of Juniors in Electrical Engineering.*

IV. General Electricity.—A course covering briefly the care and use of electrical generators, motors, batteries, switchboards, and measuring devices. *Three recitation credits per week, second term. Required of Juniors in Mechanical and Civil Engineering.*

V. Theory of Alternating Currents.—Recitations and Lectures. Alternating current theory and practice dealing with alternating current machinery, such as the A. C. dynamos, synchronous and induction motors, converters, and transformers. *Three recitation credits per week, throughout the year. Required of Seniors in Electrical Engineering.*

VI. Alternating Current Laboratory.—A course following Physics VIII and consisting of tests of different types of alternating current apparatus. Single and poly-phase generators and motors, synchronous and induction motors, converters, and transformers. *Three laboratory credits per week, throughout the year. Required of Seniors in Electrical Engineering.*

VII. Dynamo Design.—General principles of design of electrical apparatus, including the design of a direct and alternating current generator. *One and*



*one-half laboratory credits per week, throughout the year. Required of Juniors in Electrical Engineering.*

VIII. Telephone Engineering.—Discussion of the development of the telephone and modern telephone practice. *Two recitation credits per week, first term. Required of Seniors in Electrical Engineering.*

IX. Electric Lighting.—Generation and distribution of electric power for lighting purposes. *Two recitation credits per week, first term. Required of Seniors in Electrical Engineering.*

X. Electric Power Transmission.—A study of systems of high tension distribution, including the construction of the lines, insulation, protection, and troubles developing in high tension work. *Two recitation credits per week, second term. Required of Seniors in Electrical Engineering.*

XI. Electric Railways.—Discussion of economic considerations in the development of an electric railway, the construction, location of generating station, the design of the distributing system, types of motors and systems of control. *Two recitation credits per week, second term. Required of Seniors in Electrical Engineering.*

## Civil Engineering.

It is the purpose of this course to give the student such training in the fundamental principles of engineering as to prepare him for the duties and opportunities that may be offered in the various fields of civil engineering. With this object in view, application of the theories and principles learned in the classroom is made in the field, laboratory, and drafting-room. An effort is also made to give the student as liberal a training in the sciences and arts as his limited time will permit, but the primary purpose is to prepare him for one definite line of work.

In order to widen the scope of the student's opportunities, the name of the department has been changed from Highway Engineering to Civil Engineering, and corresponding changes have been made in the course of study. However, owing to the growing importance of highway engineering in this state and throughout the country in general, considerable emphasis is still placed on this phase of engineering work. The state appropriates annually a sum of money which is expended under the direction of the instructor and students of the department in the construction and maintenance of roads on the college property. In this way practical experience is obtained in highway engineering.

The equipment of the department consists of levels, transits, compasses, rods, tapes, chains, drafting instruments, etc., and test-

ing machines, to which the student has access. He also has free use of the library, in which are found the leading engineering journals, and many of the principal works on various engineering subjects.

### Subjects.

I. Surveying.—Instruction is given by means of recitations, field and laboratory work, in the theory, use, and adjustments of the compass, level, and transit. The field work includes the prolongation of straight lines, determination of distances, angles, areas, boundaries, corners, and exercises in leveling, etc. Maps are made from the field notes. *One recitation and two field credits per week, first term. Required of Sophomores in Mechanical, Electrical, and Civil Engineering.*

II. Topographic Surveying.—A study is made of the theory and use of the plane table, and of the transit and stadia in making topographic surveys. A complete topographic survey based on a system of triangulation is made, including the completion of a map. *One recitation and two field credits per week, second term. Required of Sophomores in Civil Engineering.*

III. Railroad Engineering.—The work consists of a reconnoissance, a preliminary, and a location survey of a short line of railroad, for the purpose of giving the student sufficient work to familiarize him with the methods in actual practice. A set of notes is kept by each student, from which a map, a profile, and estimates are made. A study is also made of the properties of curves, switches, frogs, turnouts, and the spiral, and the methods of locating these in the field. *Four credits per week, divided between field and recitation as would seem advisable, first term. Required of Juniors in Civil Engineering.*

IV. Graphic Statics.—Instruction is given in graphic statics and its application in the design of simple framed structures. *Three recitation credits per week, first semester. Required of Juniors in Civil Engineering.*

V. Roads and Pavements.—The theoretical work of this course consists of a discussion of the principles and details involved in the location, construction, and maintenance of earth, gravel, and macadam roads, together with a discussion of the methods of construction, durability, maintenance, and assessment of cost of the various kinds of pavements used on city streets. The field work consists in the construction of a gravel or macadam road on the college grounds. *Three recitation and one field credits per week, second term. Required of Juniors in Civil Engineering.*

VI. Bridge Details.—The work in this course consists in making a tracing of a shop drawing, estimating the weight and determining the efficiency of the various members of a highway bridge. *Two laboratory credits per week, first semester. Required of Seniors in Civil Engineering.*

VII. Bridge Analysis.—Instruction is given in the computation of stresses in the various types of bridges by graphical and algebraic methods under different conditions of loading. *Two recitation credits per week, first term. Required of Seniors in Civil Engineering.*

VIII. Bridge Design.—The student designs a plate girder and a bridge, makes the shop details, and a set of working drawings. *Three laboratory credits per week, second semester. Required of Seniors in Civil Engineering.*

IX. Masonry Construction.—This course deals with the materials of masonry, including brick, stone, lime, and cement; the theory of masonry structures, including foundations for buildings, bridges, and piers; the construction of retaining walls, culverts, bridge abutments; masonry dams and arches. The student is directed to important articles in the current literature of the subject, and systematic and thorough laboratory course on cement testing is given. *Four recitation and one laboratory credits per week, first term. Required of Seniors in Civil Engineering.*

X. Reinforced Concrete.—A study is made of the principles of mechanics underlying the design of reinforced concrete. Working stresses and economical proportions are considered, also the application of reinforced concrete construction to building construction, arches, retaining walls, dams, and miscellaneous structures. *Two recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XI. Sewerage.—A discussion of the separate and combined systems of sewers; relation of rainfall to storm-water flow; hydraulics of sewers; removal of house sewage; the design and construction of sewers and methods of sewage disposal. *Two recitation credits per week, first term. Required of Seniors in Civil Engineering.*

XII. Water Supply.—A discussion of the quantity of water required, sources of supply, flow of streams, and of ground water. Instruction is also given in the general arrangement of water works, loss of head in flow of water through pipes, stresses in dams and water towers. Works for the purification and distribution of water are discussed, including reservoirs, settling basins, pumping machinery, etc. *Three recitations per week, second term. Required of Seniors in Civil Engineering.*

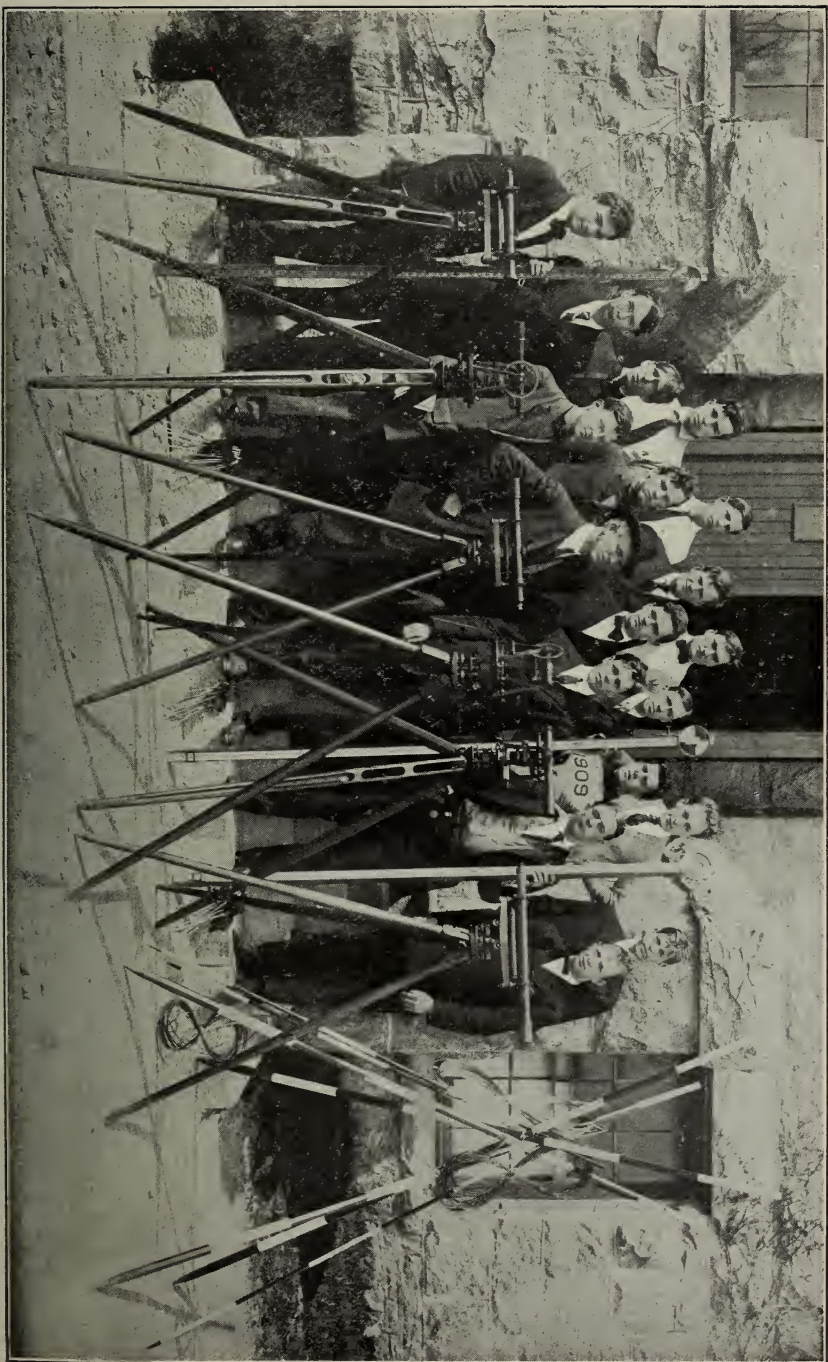
XIII. Tunnelling.—A study of the methods of making tunnel surveys and of the modern methods employed in tunnel construction. *One recitation credit per week, second term. Required of Seniors in Civil Engineering.*

XIV. Contracts and Specifications.—A study of the fundamental principles of the law of contracts, and their application to engineering work. *Two recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XVI. Vacation Reading.—Systematic reading during vacations on some topic assigned by the head of this department.

XV. Thesis.—The preparation of a thesis on some subject connected with the work of this department, involving original investigation or experiment. *Three credits per week, throughout the year. Required of Seniors in Civil Engineering.*





READY FOR FIELD WORK.





## Geology and Mineralogy.

DR. WHEELER, DR. LEIGHTON, MR. HUNTLEY.

**GEOLOGY.**—Under this subject historical geology is considered in outline, attention being given, also, to those phases of dynamical and structural geology which are particularly important. Special attention is given to rock weathering and soil formation, and to those characteristics of rocks which are of chief importance in connection with road construction.

**DETERMINATIVE MINERALOGY.**—A short course dealing with the elements of crystallography is given, together with the physical and chemical characteristics of minerals, especially of the rock-making minerals composing our soils. Laboratory work in blowpipe analysis and physical determination of minerals follows the crystallography.

### Subjects.

I. Geology.—*Two recitation credits per week, second term. Required of Juniors in Highway Engineering.*

II. Mineralogy.—See Chemistry XI.

## History.

MISS BOSTWICK.

### Subjects.

I. Social, Economic, and Industrial History of the United States.—*Two recitation credits per week, first term; and three recitation credits per week, second term. Required of Juniors in all courses.*

II. Government and Politics in the United States.—*Five recitation credits per week, first term, last six weeks; and second term, first six weeks. Required of Seniors in all courses.*

A. English History.—*Four recitation credits per week, first term; and two recitation credits, second term. Required of all Sub-Freshmen, first year.*

## Languages.

PROFESSOR WATSON, MISS BOSTWICK, MR. SPENCER.

The subjects grouped under this head are English, German, and French.

In all the college courses leading to a degree, English is required throughout the first three years and during twelve weeks of the Senior year. Much practice is given in written and oral expression, and literature is also studied in representative masterpieces. Two years of foreign language work are required in all college courses leading to a degree except mechanical, electrical, and civil engineering, where the requirement is one year. Preference is given to German, but French will be taught if there is sufficient demand for it.

The library is a most important factor in the work of the department, as the English language and literature are represented in it by some twelve hundred carefully selected volumes, and the French and German literatures by about six hundred.

#### ENGLISH.

I. Rhetoric.—Text-book study and practical application of rhetorical principles in written work. *One recitation credit per week, throughout the year. Required of Freshmen in all courses.*

II. Critical study of certain English dramas.—*One recitation credit per week, throughout the year. Required of Sophomores in all courses.*

III. Argumentation.—A study of fundamental principles. Practice in brief-making and essay writing. *Two recitation credits per week, first term. Required of Juniors in all courses.*

IV. Modern English Prose.—*Two recitation credits per week, second term. Required of Juniors in all courses.*

V. Modern English Poetry.—*Four recitation credits per week, second term, last twelve weeks. Required of Seniors in all courses.*

A. Elementary English.—Grammar, dictation, composition, and reading of masterpieces. Constant practice in writing and oral expression. *Four recitation credits throughout the year. Required of Short-Course students in Agriculture and Engineering, first year.*

B. Elementary English.—A continuation of A, including, also, some instruction in civics and economics. *Three recitation credits, throughout the year. Required of Short-Course students in Agriculture and Engineering, second year.*

C. College Entrance Requirements in English. — With composition work. *Five recitation credits per week, throughout the year. Required of Sub-Freshmen, first year.*

D. Continuation of C.—*Three recitation credits per week, throughout the year. Required of Sub-Freshmen, second year.*

## ORAL EXPRESSION.

I. Interpretive Reading.—The fundamentals of expression, pronunciation, articulation, the training of the voice. The intellectual element in expression: emphasis, inflection, phrasing—the reading of prose. The emotional element in expression: quality, force, pitch, rhythm—the reading of poetry. *One recitation credit per week, throughout the year. Required of all Freshmen.*

II. Dramatic Expression.—Standard plays will be studied in class and presented in public from time to time. *One recitation credit per week, throughout the year. Required of all Sophomores.*

III. Debating.—Instruction and practice in the art of debate. Two public debates will be given by the students. *One recitation credit per week, first term. Required of all Juniors.*

IV. Oratory and Extempore Speaking.—Theory and practice. *One recitation credit per week, second term, last twelve weeks. Required of all Seniors.*

## GERMAN.

I. Elementary German.—Grammar, dictation, conversation, reading of easy prose and poetry. *Four recitation credits per week, throughout the year. Required of Freshmen who do not offer German for entrance.*

II. Reading of intermediate texts, composition, conversation, study of one of Schiller's masterpieces or similar work. *Three recitation credits per week, throughout the year. Required of Sophomores in Agriculture, Applied Science, and Home Economics.*

III. Scientific and Classical German.—*Three recitation credits per week, throughout the year. Elective for students who have taken I and II or their equivalents.*

A. Elementary German.—Grammar, dictation, conversation, reading of easy prose and poetry. *Five recitation credits per week, throughout the year. Required of Sub-Freshmen.*

## FRENCH.

Classes in French will be formed if there is sufficient demand for them, as previously stated on page 64.

## Mathematics.

## PROFESSOR TYLER.

The work in this department covers three distinct phases of mathematical training: the College, the Sub-Freshman, and the Short-Course instruction. Throughout the regular college work, emphasis is laid both on the theory and direct application of the different sub-

jects to problems that arise in agriculture and the various branches of engineering. It is the aim to prepare the Sub-Freshmen as thoroughly for college mathematics as is done in the better high schools of the state. An attempt is made to present a working knowledge of arithmetic, algebra, geometry, trigonometry and their practical use to Short-Course students without requiring them to prove the principles involved.

### Subjects.

III a Higher Algebra and Trigonometry.—*Five recitation credits per week, first term. Required of all Freshmen.*

IV a. Solid Geometry and Analytics.—*Five recitation credits per week, second term. Required of Freshmen in Engineering and Applied Science.*

V. Analytics and Calculus.—*Five recitation credits per week, first term. Required of Sophomores in Engineering.*

VI. Calculus (completed).—*Five recitation credits per week, second term. Required of Sophomores in Engineering.*

A. Algebra.—To quadratics. *Five recitation credits per week, throughout the year. Required of Sub-Freshmen, first year. An additional one-half laboratory credit during the first term.*

B. Algebra.—Quadratic equations, theory of quadratic equations, inequalities, ratio and proportion and the progressions. *Three recitation credits per week, throughout the year. Required of Sub-Freshmen, second year.*

C. Arithmetic, Algebra.—Elementary work planned to meet the needs of Short-Course students. *Four recitation credits per week, first term. Required of students in the Short-Courses in Agriculture and Engineering, first year.*

D. Algebra, Mensuration.—*Four recitation credits per week, second term. Required of students in Short Courses in Agriculture and Engineering, first year.*

E. Plane Geometry.—*Four recitation credits per week, throughout the year. Required of Sub-Freshmen, second year.*

F. Plane Trigonometry, Applied Mathematics, Elementary Surveying, and Drainage.—*Four recitation credits, throughout the year. Required in Short Courses in Agriculture and Engineering, second year.*

### Military Science and Tactics.

CAPTAIN COOK.

All male students are required to attend exercises in military instruction during their attendance at the college unless excused by reason of physical disability. Credit is given for this work

on the same basis and under the same regulations as in other departments.

The war department furnishes for use in this instruction cadet rifles, equipments, sabres, ordnance; and details an officer of the army to act as instructor when the number of cadets is one hundred or more. The cadets are organized this year into a battalion of two companies of infantry. Theoretical instruction is given by means of lectures and recitations and practical instruction by means of infantry drills in the school of the squad, the company, and the battalion. The aim of these military exercises is to improve the physique, to inculcate the habit of prompt and cheerful obedience and courtesy to rightfully constituted authority, and to exercise an elevating influence on the conduct of the corps of cadets.

Competitive drills are held annually between the companies of the battalion. The name of the best drilled company and its commander is placed on the battalion colors. Company A, commanded by Cadet Captain L. A. Whipple, was the winner in the annual color contest held May 22, 1907.

### Subjects.

Practical Instruction.—Drills in the school of the squad, of the company, and of the battalion. *Two exercises of one hour each per week, counting as one credit, throughout the year. Required of all the command.*

Theoretical Instruction.—United States Infantry Drill Regulations. Manual of Guard Duty. Field Service Regulations of United States Army.—*One recitation credit per week throughout the year. Required of all Freshmen.*

### BATTALION ORGANIZATION, APRIL, 1908.

#### COMMANDANT,

MAURICE HOWE COOK, Captain and Signal Officer, R. I. N. G.

#### CADET OFFICERS.

Major.....	E. R. BUTTS.
Adjutant.....	E. F. SMITH.
Quartermaster.....	D. E. WARNER.
Captain.....	R. W. GOODALE.
Captain.....	P. S. BURGESS.
First Lieutenant.....	G. J. SCHAEFFER.
First Lieutenant.....	S. QUINN.
Second Lieutenant.....	H. F. FRENCH.
Second Lieutenant.....	L. E. MOYER.



Sergeant-Major.....	A. J. MINER.
Color Sergeant.....	J. M. CRAIG.
First Sergeant.....	A. M. HOWE.
First Sergeant.....	W. J. MORAN.
Sergeant.....	H. R. TISDALE.
Sergeant.....	A. H. KENYON.
Sergeant.....	J. W. SALISBURY.
Sergeant.....	C. B. EDWARDS.
Sergeant.....	W. T. NEAL.
Sergeant.....	H. SOUTHARD.
Sergeant.....	W. G. TAYLOR.
Sergeant.....	L. L. MOUNCE.
Corporal.....	R. W. CUMMINGS.
Corporal.....	E. A. COMBER.
Corporal.....	A. F. WAGNER.
Corporal.....	O. M. DRUMMOND.
Corporal.....	H. J. SMITH.
Corporal.....	R. H. CARPENTER.
Corporal.....	I. C. MITCHELL.
Corporal.....	L. C. EASTERBROOKS.

## Physics.

PROFESSOR TOLMAN, MR. W. S. RODMAN.

The instruction given in this department is intended to acquaint the students with the fundamental concepts of physical science. The work will be as broad as is consistent with the time and needs of the students.

This department is equipped with vernier and micrometer calipers, micrometer microscopes, comparator, dividing engine, cathetometer, simple and compound pendulums and balances for exact measurements in mechanics. It has also apparatus for determining the coefficient of linear expansion, and for the determination of specific and latent heats, a weight thermometer apparatus for determining the density of liquids and solids, a thermo-couple for direct determination of temperatures up to 1650° C., Melloni's apparatus for investigation in radiant heat, and apparatus for determining the mechanical equivalent of heat.

In light the laboratory is equipped to carry on the usual college work, and so has apparatus for finding the focal length of lenses and mirrors: a Pulfrich refractometer, spectrometers, an interferometer (Institute of Technology patterns), photometer, total re-

flectometer and many smaller instruments, including simple and compound microscopes. The greater part of the above listed apparatus is new, having been recently purchased of foreign makers.

The laboratory for exact measurements in electricity and magnetism is also fitted up with new apparatus recently purchased of the Leeds and Northrup Company of Philadelphia, and among other instruments are several types of D'Arsonval galvanometers; Wheatstone bridges, slide wire and post-office patterns; standard cells (Clark and Weston types); standards of resistance, capacity and self-induction; magnetometers; voltmeters; and many smaller instruments sufficient to carry out the usual college work in electrical measurements. For advanced electrical measurements the department is provided with Weston and Thompson ammeters, and voltmeters with both low and high ranges, wattmeters, a Leeds and Northrup alternating and direct current comparator.

In the subject of sound the department is provided with apparatus for the determination of wave-length, pitch, frequency, etc.

### Subjects.

I. Descriptive Physics.—A course designed for students in Agriculture. Considerable time is given to the discussion of the principles of mechanics as applied to farm machinery. The course furnishes an excellent foundation for further work in agricultural physics. *Five recitation credits per week, second term. Required of Sophomores in Agriculture.*

II. General Physics.—A mathematical treatment of the subject. *Four recitation credits per week, throughout the year. Required of all Sophomores in Engineering and Teachers' Course in Applied Science.*

III. Laboratory Physics.—A course in physical measurements intended to give students methods and to form a basis for future engineering work. The calculation of results will be given special attention. *One and one-half laboratory credits per week, throughout the year. Required of Sophomores in Engineering and Teachers' Course in Applied Science.*

IV. Electrical Measurements.—A course of lectures treating of the theory and manipulation of electrical measuring instruments. *Three recitation credits per week for three weeks, first term. Required of Juniors in Electrical Engineering.*

V. Electrical Measurements Laboratory.—Direct currents measurements, resistance, potential, current, magnetic properties of iron and steel, calibration of direct current instruments. *Three laboratory credits per week for twelve weeks, first term. Required of Juniors in Electrical Engineering.*

VI. Photometric Measurements.—A study of the candle power of different

forms of arc, incandescent, and mercury-vapor lamps. *Two laboratory credits per week, second term. Required of Juniors in Electrical Engineering.*

VII. Electrical Measurements Laboratory.—Alternating currents measurements, self-induction, mutual-induction, capacity. Calibration of alternating current instruments. *Three laboratory credits for six weeks, first term. Required of Seniors in Electrical Engineering.*

A. Elementary Physics.—A descriptive course covering the subjects, mechanics of liquids and gases. *Two recitation and one laboratory credits per week, second term. Required of Sub-Freshmen and Short-Course students in Engineering, first year.*

B. Elementary Physics.—A descriptive course in continuation of Physics A, completing an elementary course in the subject. *Two recitation and one-half laboratory credits per week, throughout the year. Required of Sub-Freshmen and Short-Course students in Engineering, second year.*

## Psychology.

PRESIDENT EDWARDS.

I. Lectures, recitations, simple laboratory experiments.—*Three recitation credits per week, first term. Required of Juniors in Applied Science and Home Economics.*

## Stenography and Typewriting.

MISS TOLMAN.

Stenography and typewriting are offered as electives. A thorough knowledge of the common English branches is required of every one taking the subjects. The Chandler system of stenography and either the touch or sight system of typewriting are taught. Absolute accuracy is required from the first in both subjects, and particular attention is paid to spelling and punctuation.

### Subjects.

I. Elementary.—Instruction in principles; dictation. *Four recitation credits per week, throughout the year. Elective.*

II. Advanced.—Dictation, including the following: business letters, legal documents,—terms used, deeds, wills, mortgages, contracts, declarations; hints useful in office work; general dictation. *Three recitation credits per week, throughout the year.*





THE BIOLOGICAL LABORATORY.



## Zoology.

PROFESSOR BARLOW.

The work in this department is designed to meet the needs of two classes of students, those who are interested in the economic aspect of animal life and those who purpose to become teachers. To meet the needs of the first class, subjects are given which are planned to call attention to the economic importance of the different orders. Much time is allotted to entomology, and in this subject special attention is given to injurious species. For those who are to be teachers, a thorough training is given in the morphology and classification of animals as a preparation for the more special subjects that follow. In these attention is directed to the habits and relations of animals, which are studied both in the field and laboratory.

The laboratory is equipped with a series of charts, valuable models and many mounted skeletons. The Rhode Island birds are represented by mounted specimens of practically every species; fishes, reptiles, and batrachians, by alcoholic preparations. The collection of insects, begun recently, now fills about eighty cases, and is being steadily increased. Each student is given the use of compound and dissecting microscopes and necessary instruments for laboratory work.

### Subjects.

I. General Zoölogy.—Discussion of the more important laws of Biology and the dissection of representatives of the more important Phyla. *Two laboratory and one recitation credits, first term. Required of Sophomores in Agriculture, Home Economics, and Applied Science.*

II. General Zoölogy, continued.—Special attention being given to the relation of animals to their surroundings. *Two laboratory and one recitation credits, second term. Required of Sophomores in Applied Science.*

III. Physiology.—The physiology of the higher mammals. *One laboratory and three recitation credits per week, second term. Required of Sophomores in Agriculture and Home Economics.*

IV. Economic Entomology.—*One laboratory and three recitation credits per week, second term. Required of Juniors in Agriculture.*

V. General Entomology.—*Two laboratory and two recitation credits per week throughout the year. Elective.*

VI. Systematic Entomology.—*Three laboratory credits per week, throughout the year. Elective for those who are taking or have taken Zoölogy V.*

VII. Vertebrate Anatomy.—*Two laboratory and one recitation credits per week, first term. Required of Juniors in Home Economics.*

VIII. Histology and Embryology.—*Two laboratory and one recitation credits per week, second term. Required of Juniors in Home Economics.*

IX. Methods in Nature Study.—*Bird life, habits of insects, aquaria. Two laboratory or field credits and one recitation credit per week, second term. Required of Sophomores in the Teachers' Course in Applied Science.*

A. Elementary Zoölogy.—*Deals with forms of economic importance. Two recitation and two and one-half laboratory credits per week, first term. Required of Short-Course students in Agriculture, first year.*



FROM THE VILLAGE ROAD.



## Organizations.

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### Athletic Association.

JAMES MCINTYRE CRAIG.....	President.
LEROY LEIDMAN MOUNCE.....	Vice-President.
JOHN BARLOW.....	Secretary-Treasurer.

### Agricultural Club.\*

LEROY LEIDMAN MOUNCE.....	President.
JOHN LELAND SHERMAN.....	Vice-President.
HOWARD ALBERT SAFFORD.....	Secretary-Treasurer.

### Engineering Society.

CLESSON HERBERT FIELD.....	President.
ALBERT MENDEL <sup>5</sup> HOWE.....	Vice-President.
LUCIUS ALBERT WHIPPLE.....	Secretary-Treasurer.

### Science Club.

J. FRANK MORGAN.....	Secretary.
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Members of the Faculty, Juniors, and Seniors are eligible to membership.

### Young Men's Christian Association.

HARRY ROBERT TISDALE.....	President.
RANDOLPH HAYWOOD CARPENTER.....	Vice-President.
DAVID L. BRIDGE WORRALL.....	Secretary.
WALTER GRAY TAYLOR.....	Treasurer.

### Young Women's Christian Union.

ORPHA LILLIE ROSE.....	President.
MARY ALBRO SHERMAN.....	Vice-President.
RUBY BELLE ROCKWELL.....	Secretary-Treasurer.

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\*Affiliated with the New-England Federation of Agriculturists.



### Alumni Association.

ARTHUR EARLE MUNRO, 1900.....President.  
Providence, R. I.

• MINER SANFORD MACOMBER, 1907.....Vice-President.  
State College, Pa.

MABEL DEWITT ELDRED, 1895.....Secretary-Treasurer.  
Kingston, R. I.

#### *Executive Committee.*

A. E. MUNRO, 1900,  
M. S. MACOMBER, 1907,

JEAN GILMAN, 1905.

M. D. Eldred, 1895,  
H. R. LEWIS, 1907,

## Students.

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### Graduates.

Bidwell, George Leslie, B. S. (Tufts, '05), Chem.....	Kingston.
George, Lillian Mabelle, B. S. ('99), Physics.....	Kingston.
Bosworth, Alfred Willson, B. S. ('99) Chem.....	Geneva, N. Y.

### Seniors.

Drew, Joseph Drake, Chem.....	Brockton, Mass.
Field, Clesson Herbert, Civil Eng.....	Brockton, Mass.
Fiske, Herbert Andrew, Elec. Eng.....	Olneyville.
Gardiner, Robert Franklin, Chem.....	Wakefield.
Gory, Edward Allen, Elec. Eng.....	Pascoag.
Kenyon, Susan Elnora, Biol.....	Usquepaugh.
Mitchell, Clovis William, Civil Eng.....	Harrisville.
Rose, Orpha Lillie, Gen. Sci.....	Kingston.
Sheldon, George Ware, Elec. Eng.....	Wakefield.
Sherman, Mary Albro, Agr.....	Portsmouth.
Smith, John Lebroc, Elec. Eng.....	Narragansett Pier.
Whipple, Lucius Albert, Civil Eng.....	Greenville.

### Juniors.

Cargill, Rhobie Lucelia, Gen. Sci.....	Abbott Run.
Craig, James McIntyre, Agr.....	Riverpoint.
Crandall, Fred Kenyon, Agr.....	Westerly.
French, Henry Frank, Elec. Eng.....	Providence.
Gardiner, Henry Wallace, Civil Eng.....	Wakefield.
Howe, Albert Mendel, Elec. Eng.....	Brockton, Mass.
Knowles, Walter, Civil Eng.....	Kingston.
Moran, Walter John, Civil Eng.....	New London, Conn.
Moyer, Louis Earl, Civil Eng.....	Dexter, N. Y.
Rockwell, Ruby Belle, Chem.....	Troy, Penn.
Salisbury, James William, Civil Eng.....	Bristol.
Smith, Elmer Francis, Elec. Eng.....	East Lyme, Conn.
Tisdale, Harry Robert, Chem.....	New London, Conn.
Tucker, Ellen Capron, Gen. Sci.....	Kingston.

### Sophomores.

Blomberg, Charles Harold, Civil Eng.....	Brooklyn, N. Y.
Burgess, Paul Steere, Chem. Eng.....	Pawtucket.
Canfield, Robert Henry Munson, Civil Eng.....	Bridgeport, Conn.

Carpenter, Randolph Haywood, Elec. Eng.....	East Providence.
Cummings, Robert Winthrop, Mech. Eng.....	Orange, Mass.
Easterbrooks, Harold Arnold, Biol.....	Providence.
Easterbrooks, Louis Church, Civil Eng.....	Providence.
Edwards, Clarence Bland, Elec. Eng.....	Kingston.
Fairchild, Stanley, Civil Eng.....	Westport, Conn.
Goodale, Ralph Waldo, Civil Eng.....	Leominster, Mass.
Hardy, John Ira, Chem.....	Groveland, Mass.
Heath, Bertha May, Agr.....	Lunenburg, Mass.
Henry, Warren, Civil Eng.....	Hopedale, Mass.
Kenyon, Amos Harris, Elec. Eng.....	Usquepaugh.
Lamond, Helen Scott, Gen. Sci.....	Usquepaugh.
Lee, Alfred Rogers, Agr.....	Greenwood, Mass.
Mounce, Leroy Leidman, Agr.....	North Marshfield, Mass.
Peabody, George Abbott, Elec. Eng.....	Middleton, Mass.
Sherman, John Leland, Agr.....	Providence.
Smith, Hiram Jameson, Civil Eng.....	Woonsocket.
Stetson, Clifton Orrison, Elec. Eng.....	Randolph, Mass.
Taylor, Walter Gray, Elec. Eng.....	Middletown.
Tucker, Harriet Taber, Gen. Sci.....	West Kingston.
Wagner, Albert Frederic, Civil Eng.....	Berkeley.
Wheeler, Richard Howes, Elec. Eng.....	New London, N. H.
Worrall, David Elbridge.....	Woonsocket.

### Freshmen.

Albro, Harry Benjamin.....	Pontiac.
Andrews, Carmen Nichols.....	Slocums.
Bacon, Carlos Fabens.....	Bangor, Me.
Briggs, Sarah Elsie.....	Kenyon.
Butts, Eberhard Raynor.....	East Greenwich.
Caldwell, Dorothy Walcott.....	Woonsocket.
Comber, Edward Anthony.....	Narragansett Pier.
Crandall, Frank Henry.....	Westerly.
Davis, Edgar George.....	Providence.
Drummond, Oliver Murray.....	Providence.
Eleazarian, Aram.....	Teheran, Persia.
Faulkner, Clarence William.....	Warren.
Gilchrest, Clyde Ronald.....	Leominster, Mass.
Gilman, M. Elvin.....	Gilman, Me.
Hadley, George Francis.....	Hope Valley.
Hahn, Byron George.....	Thomaston, Me.
Harris, Burton Kenneth.....	Lime Rock.
Hazard, Ralph Marshall.....	Newport.
Healy, Patrick Joseph.....	Newport.
Kent, Robert Willard.....	Woonsocket.
Leonard, Charles Augustus.....	Hingham, Mass.
Madison, Thomas Edwin.....	East Greenwich.

Minor, Arthur Jacob.....	Kingston.
Mitchell, Irving Calvary.....	Harrisville.
Mowry, William Wheatley.....	Woonsocket.
Quinn, Stephen.....	Wakefield.
Robinson, Benjamin Rowland.....	Bedford Station, N. Y.
Safford, Howard Albert.....	Providence.
Sanford, Thomas Whitredge.....	Adamsville.
Schaeffer, George Joseph.....	Peacedale.
Twe, Dihdwo.....	Liberia, West Africa.
Wade, Ceylon Raymond.....	Bridgeton.
Warner, David Edmond, Jr.....	Bridgeton.
Whalen, William Joseph.....	Providence.
Wheeler, Ellery Harrison.....	Valley Falls.
Wood, Edith Channing.....	Slocums.

### Specials.

Browne, Mary Katherine.....	Kingston.
Davis, Augustus Boss.....	Kingston.
Hulse, Frank Halsey.....	Cowesett.
Meears, Etta Elizabeth.....	Kingston.
Pettengill, George Herbert.....	Amherst, N. H.
Pratt, Stuart Greene.....	Providence.
Rawdon, Herbert Edward Carson.....	Providence.
Sisson, Colville Brown.....	Providence.
Slack, Lewis.....	Kingston.
Soule, Daniel Anthony.....	Wickford.

### Sub-Freshmen.

Balanzategui, William.....	San Sebastian, Spain.
Burdick, George Chester.....	Niantic.
Daniels, Willis Washington.....	Pawtucket.
Drake, Howard Prouty.....	Kingston.
Dyer, Lola Segar.....	Slocums.
Espina, Manuel.....	Matanzas, Cuba.
Holland, Leo Joseph.....	Providence.
Hopkins, Raymond Canfield.....	Shannock.
Hoxie, Harry Bailey.....	Quonochontaug.
Johnson, Frederick Isaiah.....	Barrington.
Kennedy, William Franklin.....	Wakefield.
Kenyon, Annie Eliza.....	Usquepaugh.
Macklin, Walter Elwood.....	Cumberland Hill.
MacNiff, David John Shields.....	Providence.
Neal, William Thomas.....	Pittsfield, Mass.
Patterson, Arthur John.....	Buffalo, N. Y.
Wood, Susie Stanton.....	Slocums.
Young, James Hannibal.....	Brooklyn, N. Y.

### Short Course in Agriculture.

Aizpuru, Frank .....	Panama, Panama.
Barker, Stephen Congdon .....	Middletown.
Bradshaw, Alvin Simpson .....	Gardner, Mass.
Cobb, Electra Henrietta .....	Howardsville, Va.
Robinson, Eben George .....	Edgewood.
Southard, Horace .....	Providence.
Stevens, George Austin, Jr. ....	Ridgewood, N. J.

### Short Course in Engineering.

Aizpuru, Elias .....	Panama, Panama.
Chappell, Frank .....	Westerly.
Fagan, Hugh Jean .....	Peacedale.
Furber, Everett Wilkinson .....	Pawtucket.
Hayward, Harry Louis .....	Holyoke, Mass.
Millard, George Albert .....	Arlington.
Miller, John Wright .....	Narragansett Pier.
Rayhill, Charles William .....	Warwick.
Toolin, Bartholomew James .....	Cowesett.
Tully, William Henry .....	Peacedale.
Wood, John Midgley .....	Pawtucket.

### Course in Poultry Keeping.

Anthony, Karl Gustaf .....	Newport.
Atwell, S. Virginia .....	Worcester, Mass.
Austin, Edith M. ....	New York, N. Y.
Barber, Frank Gardner .....	Norwalk, Ohio.
Brummer, Henry C. ....	New York, N. Y.
Carr, Daniel Nicholas .....	Peacedale.
Crandall, Frank Henry .....	Westerly.
Crowell, Nathan .....	East Dennis, Mass.
Davidson, Albert Porter .....	Centre Conway, N. H.
Duffee, Charles Pierce, Jr .....	Chelsea, Mass.
Eldred, Ida Lewis Sherman .....	Kingston.
Hazard, Harold L. ....	Peacedale.
Lifshitz, Samuel Solomon .....	New York, N. Y.
Murch, Ralph Herbert .....	West Lebanon, N. H.
Parker, Emma J. ....	Still River, Mass.
Sherman, Philip A. ....	Grantham, N. H.
Stevens, George Austin, Jr .....	Ridgewood, N. J.
Taylor, Andrew Puffner .....	Swarthmore, Penn.
Twe, Dihdwo .....	Liberia, West Africa.

Total number of students (none counted twice).....153



## Graduates.\*

1894.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ADAMS, GEORGE EDWARD . . . Kingston.	Agr.	Professor of Agriculture, R. I. C. A. & M. A.
AMMONDS, GEORGE CLARENCE . . 5 Boylston Place, Boston, Mass.	Mech.	Railroad Postal Clerk, on N. Y., N. H. & H. R. R. Co.
ARNOLD, CHAPIN TRAFFORD . . 52 Wood St., Providence.	Agr.	Electrical Contractor, Office 283 Westminster St., Room 10, Providence.
BURLINGAME, GEO. WASHINGTON . R. F. D. No. 2, Box 56, North Scituate.	Agr.	Farmer.
CLARK, HELEN MAY (MRS. WM. F. B. LEAVITT), B. L., Smith College, 1899. Essex Fells, New Jersey.		At home.
KNOWLES, JOHN FRANKLIN . . Ashaway.	Mech.	With Contractor John Bristow.
MADISON, WARREN BROWN . . Kingston.	Agr.	Professor of Animal Husbandry, R. I. C. A. & M. A.
MATHEWSON, ERNEST HOXSIE . . Ph. B., Brown University, 1896. 1486 Meridian Place, Washington, D. C.	Mech.	Crop Technologist in Tobacco, U. S. Department of Agriculture.
PECKHAM, REUBEN WALLACE . . Melville Station, Newport.	Agr.	Market Gardener.
RATHBUN, WILLIAM SHERMAN . . 241 Washington Avenue, West Haven, Conn.	Agr.	Editor West Haven Advertiser.
RODMAN, GEORGE ALBERT . . . New Haven, Conn.	Mech.	Building Dept., Room 24, Union Station, N. Y., N. H. & H. R. R. Co.
SARGENT, CHARLES LAWRENCE . . Ph. D., University of Pennsylvania, 1900. Newark, New Jersey.	Agr.	Chemist, Murphy Varnish Co.
SLOCUM, SAMUEL WATSON . . . 130 West Broad St., Westerly.	Agr.	Carpenter.

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\*It is earnestly desired that the graduates inform the Alumni Bureau of any permanent change of address.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
SPEARS, JOHN BARDEN . . . .	Agr.	Farmer.
South Scituate, R. F. D.		
SWEET, STEPHEN ADELBERT . . .	Agr.	Farmer.
Slocum.		
TUCKER, GEORGE MASON . . . .	Agr.	Proprietor, Plant-Breeding Farm.
Ph. D., Göttingen, 1899.		
Flora, Illinois.		
WILBER, ROBERT ARTHUR . . . .	Mech.	Express Agent.
East Greenwich.		

## 1895.

ALBRO, LESTER FRANKLIN . . . .	Agr.	Professional Singer.
Melville Station, Newport.		
BURDICK, HOWLAND . . . . .	Agr.	Instructor in Dairying, R. I. C. A.
Kingston.		& M. A.
CLARKE, CHARLES SHERMAN . . .	Mech.	Marine Engineer.
Jamestown.		
ELDRED, MABEL DEWITT . . . .		Instructor in Drawing, R. I. C. A.
Kingston.		& M. A.
HAMMOND, JOHN EDWARD . . . .	Agr.	Farmer.
Jamestown.		
OATLEY, LINCOLN NATHAN . . . .	Mech.	Contractor and Builder.
Wakefield.		
SCOTT, ARTHUR CURTIS . . . . .	Mech.	Professor of Electrical Engineer-
Ph. D., Univ. of Wisconsin, 1902.		ing, Consulting Engineer, Univ.
Austin, Texas.		of Texas.
TEFFT, JESSE COTTRELL . . . . .	Mech.	Purser, Newport and Jamestown
Jamestown.		Ferryboat Co.
WINSOR, BYRON EDGAR . . . . .	Mech.	Poultryman.
Coventry.		

## 1896.

BROWN, MAY (MRS. CHARLES A. WHITE).	At home.
Narragansett Pier.	
GREENMAN, ADELAIDE MARIA	
(MRS. R. WALLACE PECKHAM) . . .	At home.
Melville Station, Newport.	
KENYON, ALBERT LEWIS . . . .	Mech. Farmer.
Lebanon, Connecticut.	
MOORE, NATHAN LEWIS CASS . . .	Agr. Fruit-Grower.
Shannock.	
TABOR, EDGAR FRANCIS . . . . .	Mech. Calico Printer, Silver Spring
69 Doyle Ave., Providence.	Bleaching and Dyeing Co.
*WILLIAMS, JAMES EMERSON . . .	Agr.

\* Deceased.

## 1897.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CARMICHAEL, WELCOME SANDS . . . Shannock.	Sci.	Bookkeeper, Providence Journal Co., Providence.
CASE, HERBERT EDWARDS BROWN . Ph. B., Brown University, 1900. Graduate, Hartford Theological Seminary, 1904.	Mech.	Missionary, Marianas, Island of Guam, U. S. A.
GRINNELL, ARCHIE FRANKLIN . . 85 Ninth St., Providence.	Mech.	Draughtsman, Brown & Sharpe Mfg. Co.
HANSON, GERTRUDE MAIE . . . Usquepaugh.	Sci.	Teacher.
HOXSIE, BESSIE BAILEY (MRS. E. F. RUECKERT) . . . 98 Melrose St., Providence.	Sci.	At home.
KENYON, ALBERT PRENTICE . . 10 West St., Westerly.	Mech.	Bookkeeper, Maxson & Co., West- erly.
KENYON, CHARLES FRANKLIN . . Shannock.	Mech.	Stationary Engineer, Boston, Mass.
LARKIN, JESSIE LOUISE . . . 98 Beach St., Westerly.	Sci.	Stenographer.
MARSLAND, LOUIS HERBERT . . . 7 Exchange St., Auburn, N. Y.	Mech.	Leveller, Dept. State Engineer and Surveyor.
TEFFT, ELIZA ALICE . . . . . 16 Rocket St., Westerly.	Sci.	Teacher, East Greenwich.
THOMAS, IRVING . . . . . 2217 South Darien St., Philadel- phia, Pa.	Mech.	Designer of Patterns.

## 1898.

ARNOLD, SARAH ESTELLE (MRS. R. O. BROOKS) . . . . . 191 Franklin St., New York City.	Sci.	At home.
BARBER, GEORGE WASHINGTON . . East Greenwich.	Agr.	Clerk.
CARGILL, EDNA MARIA (MRS. LESTER H. BROWN) . . . Abbott Run.	Sci.	At home.
CASE, JOHN PETER . . . . . 26 Courtland St., New York City.	Agr.	With Brown Hoisting Machinery Company.
CLARK, WILLIAM CASE . . . . . Wakefield.	Sci.	Secretary, Sea-View Electric Rail- road.
CONGDON, HENRY AUGUSTUS . . Kingston.	Mech.	Farmer.
FLAGG, MARTHA REBECCA . . . Hardwick, Mass.	Sci.	At home.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
HARLEY, WILLIAM FERGUSON . . . 62 Hillside Avenue, Providence.	Agr.	Salesman, with Messrs. Callender, McAuslan & Troup Providence.
TURNER, HARRIETTE FLORENCE (MRS. GEO. M. TUCKER) . . . Graduate, Drexel Institute, 1900, Flora, Illinois.	Sci.	At home.
WILSON, GRACE ELLEN (MRS. W. F. HARLEY) . . . . . 62 Hillside Avenue, Providence.	Sci.	At home.

## 1899.

BOSWORTH, ALFRED WILLSON . . . Geneva, N. Y.	Sci.	Associate Chemist, N. Y. Agr. Exp. Sta.
BROOKS, RALPH ORDWAY . . . . 191 Franklin St., New York City.	Sci.	Director and Chief Chemist, Official Testing Laboratory.
GEORGE, LILLIAN MABELLE . . . . A. B., Univ. Ill., 1904. Kingston.	Sci.	Librarian, R. I. C. A. & M. A.
HARVEY, MILDRED WAYNE . . . . 115 Broadway, New York City.	Sci.	Private Secretary, National Cop- per Bank.
KENYON, BLYDON ELLERY . . . . Austin, Texas.	Agr.	Instructor, School of Electrical En- gineering, University of Texas.
KNOWLES, CARROLL . . . . . 127 Hamilton St., Providence.	Mech.	Tool Designer, Brown & Sharpe Mfg. Co.
KNOWLES, HARRY . . . . . Ph. B., Brown University, 1906. 19 East Park St., Newark, N. J.	Sci.	Reporter, Newark Sunday Call.
LADD, MERRILL AUGUSTUS . . . . 304 No. Boulevard, Atlanta, Ga.	Mech.	Commercial Representative for Florida and Georgia, General Electric Co.
MORRISON, CLIFFORD BREWSTER . . 543 Broad St., Providence.	Sci.	Chemist, City Sewerage Dept.
OWEN, WILLIAM FRAZIER . . . . Schenectady, N. Y.	Mech.	Engineering Dept., General Elec- tric Co.
PAYNE, EBENEZER . . . . . M. D., Univ. Michigan, 1904. Great Barrington, Mass.	Sci.	Physician and Surgeon.
PHILLIPS, WALTER CLARKE . . . . Ph. B., Brown University, 1902. A. M., Brown University, 1903. 1005 W. Illinois St., Urbana, Ill.	Mech.	Instructor in English Literature, University of Illinois.
REYNOLDS, ROBERT SPINK . . . . Room 314, Gen. Office Bldg.. New Haven, Conn.	Mech.	Chief Draughtsman, Building Dept., N. Y., N. H. & H. R. R. Co.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
RICE, MINNIE ELIZABETH (Mrs. ROBERT J. SHERMAN) . . . Lafayette.	Sci.	At home.
SHERMAN, ABBIE GERTRUDE (Mrs. BENJAMIN BARTON) . . . 56 Pavilion Ave., Providence.	Sci.	At home.
SHERMAN, GEORGE ALBERT . . . West Kingston.	Mech.	Insurance Agent.
THOMPSON, SALLY RODMAN (Mrs. LEWIS BALCH) . . . Kingston.	Sci.	At home.
1900.		
BRIGHTMAN, HENRY MAXSON . . . 410 Murray Bldg., Grand Rapids, Mich.	Mech.	Engineering and Construction.
CROSS, CHARLES CLARK . . . . 814 So. 19th St., Newcastle, Indiana.	Mech.	Gen. Inspector, Maxwell-Briscoe Motor Co.
ELDRD, JOHN RALEIGH . . . . Lincoln Hall, Ithaca, N. Y.	Mech.	Instructor in Civil Engineering, Cornell University.
FISON, GERTRUDE SARAH . . . . 1178 Park Place, Brooklyn, N. Y.	Sci.	Children's Librarian, Brooklyn Public Library, 234 Albany Ave., Brooklyn.
FRY, JOHN JOSEPH . . . . . A. B., Oberlin, 1904. Glenbrook, Conn.	Mech.	Principal, Darien Public School.
GODDARD, EDITH (Mrs. LAWRENCE B. REED) . . . . 25 Main St., Plymouth, Mass.	Sci.	At home.
KENYON, AMOS LANGWORTHY . . . Newburgh, N. Y.	Agr.	Dairyman, Brookside Farm.
MUNRO, ARTHUR EARLE . . . . Ph. B., Brown University, 1902. 41 George St., Providence.	Sci.	Attorney-at-Law. 49 Westminster St.
SOULE, RALPH NELSON . . . . . East Greenwich.	Sci.	Student, 201 E. St. N. W., Wash- ington, D. C.
STEERE, ANTHONY ENOCH . . . . Fort Hunter, N. Y.	Mech.	Assistant Civil Engineer, New York State Barge Canal.
STILLMAN, LENORA ESTELLE . . . 443 Bleecker St., Brooklyn, N. Y.	Sci.	Teacher.
TUCKER, BERTHA DOUGLASS . . . R. F. D. No. 2, Box 105, Swansea, Mass.	Sci.	Dressmaker.
WHEELER, CHARLES NOYES . . . . 97 Garden St., Pawtucket.	Sci.	Clerk, Wm. H. Haskell Manufac- turing Co.



NAME AND ADDRESS.	COURSE.	OCCUPATION.
WILSON, JOSEPH ROBERT . . . Belleville.	Mech.	In Woolen Mills, J. P. Campbell.

## 1901.

BRAYTON, CHARLES ANDREW . . . Fiskeville.	Agr.	Farmer.
BRIGGS, NELLIE ALBERTINE . . . Providence.	Sci.	Stenographer, R. I. Hospital Trust Co.
BURGESS, CHARLES STUART . . . 264 Sayles St., Providence.	Mech.	Draughtsman, Brown & Sharpe Mfg. Co.
CLARNER, LOUIS GEORGE KARL, JR. Arnold's Mills.	Sci.	Farmer.
DAWLEY, EDNA ETHEL . . . . Kenyon.	Sci.	Teacher.
DENICO, ARTHUR ALBERTUS . . . 20 Croyland Road, Providence.	Sci.	With Providence Telephone Co.
*JAMES, RUTH HORTENSE (MRS. HERBERT E. ROUSE) . . .	Sci.	
SHERMAN, ANNA BROWN . . . . Kingston.	Sci.	Advertising.
SHERMAN, ELIZABETH AGNES . . . 41 Milk St., Boston, Mass.	Sci.	Stenographer, with Whitehall Portland Cement Co.
SMITH, HOWARD DEXTER . . . . A. M., Brown University, 1904. Ph. D., Tufts College, 1906. 834 Church St., Beloit, Wisconsin.	Sci.	Instructor in Chemistry, Beloit College.
STEERE, ROENA HOXSIE . . . . 98 Fifield St., Providence.	Sci.	Stenographer, with Anthony & Cowell Co.
WILBY, JOHN . . . . . Flat River, Missouri.	Sci.	Supply Clerk, Central Lead Co.

## 1902.

CLARKE, LATHAM . . . . . A. M., Brown University, 1903. Ph. D., Harvard University, 1905. Boylston Hall, Cambridge, Mass.	Chem.	Instructor in Chemistry, Har- vard University.
FERRY, OLIVER NEEDHAM . . . . 8 Armington Ave., Providence.	Mech.	With Providence Engineering Co.
MAXSON, RALPH NELSON . . . . Ph. D., Yale University, 1905. 522 Rose St., Lexington, Kentucky.	Chem.	Assistant Professor in Chemistry, Kentucky University.
PITKIN, ROBERT WILLIAM . . . . Rockville, Conn., R. F. D. No. 1.	Mech.	Farmer.

## 1903.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
BARBER, KATE GRACE . . . Ph.D., Yale University, 1906. Washington, D. C.	Gen. Sci.	Micro-analyst, Bureau of Chemistry, U. S. Department of Agriculture.
CONANT, WALTER AIKEN . . . Care Sidney A. Wilbour, 17 Milk St., Boston, Mass.	Agr.	Dairying, North Amherst, Mass.
GODDARD, WARREN, JR . . . Graduate New Church Theological School, 1907. Contacook, New Hampshire.	Mech.	Pastor, New Jerusalem Church.
KEEFER, EDITH CECILIA . . . 13 Poplar St., Providence.	Biol.	Teacher of Science.
KENT, RAYMOND WARREN . . . A. M., Harvard University, 1904. Akron, Ohio.	Chem.	Chemist, Diamond Rubber Co.
TEFFT, ERNEST ALLEN . . . Broadway, Providence.	El. Eng.	With Amer. Locomotive Works.

## 1904.

BALLOU, WILLARD ALGER . . . 231 Ryerson St., Brooklyn, N. Y.	Biol.	Instructor in Chemical Mathematics, Pratt Institute.
QUINN, MARY LOUISE . . . . 640 South Webster Ave., Green Bay, Wisconsin.	Biol.	Teacher of Botany and Physiology, High School.
RODMAN, WALTER SHELDON . Kingston.	El. Eng.	Instructor in Physics and Electrical Engineering, R. I. C. A. & M. A.

## 1905.

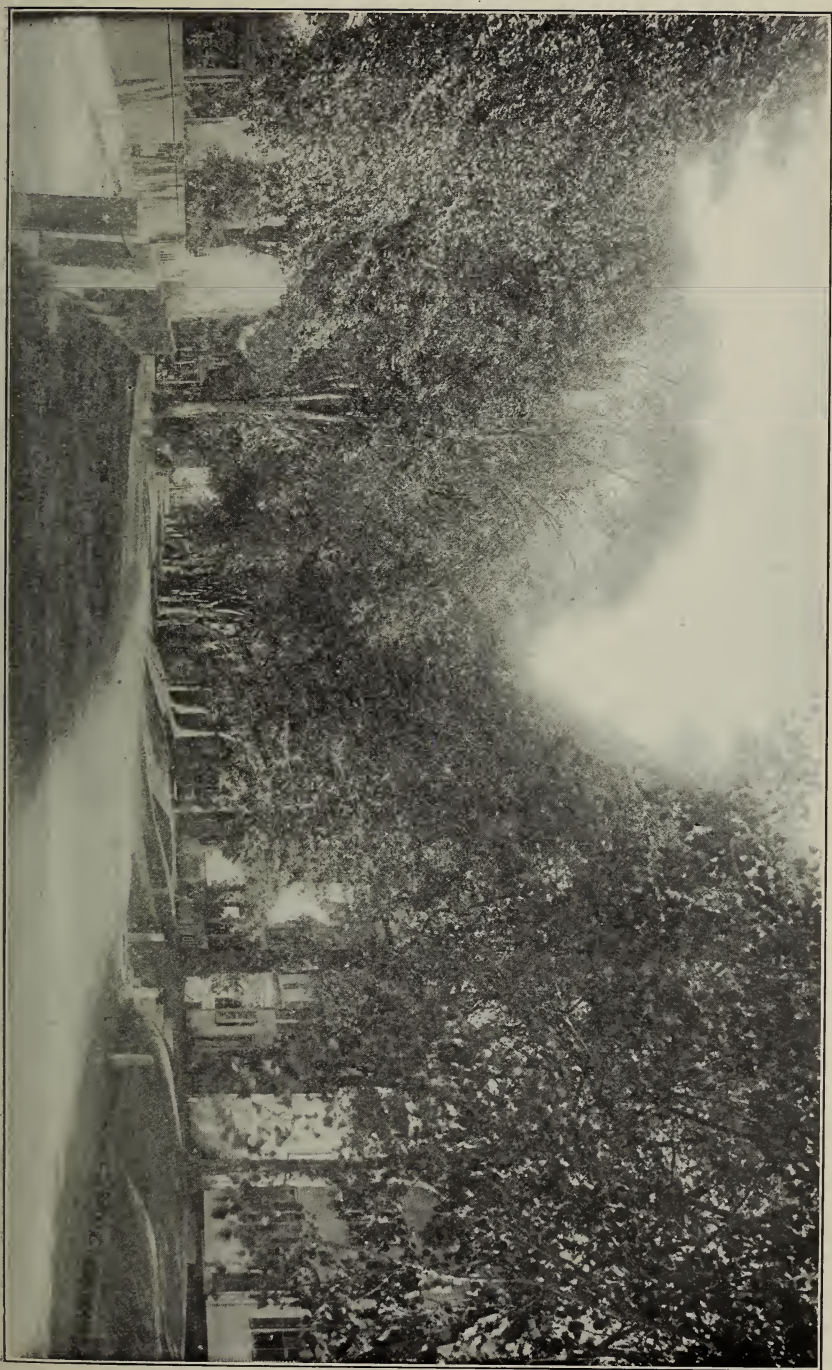
CHAMPLIN, SARAH ELIZABETH . 30 Portland St., Providence.	Gen. Sci.	In Office of Burt Mfg. Co., 226 Eddy St.
DOW, VICTOR WELLS . . . . 17 Battery Place, New York City.	High. Eng.	Traveling Representative of Barrett Mfg. Co.
GILMAN, JEAN . . . . . Hampton, Virginia.	High. Eng.	Assistant to Director of Trade School, Hampton Institute.
HARRALL, NELLIE ARMSTRONG Wakefield.	Gen. Sci.	Student, Normal School of Physical Training, Cambridge, Mass.

## 1906.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ARNOLD, BENJAMIN HOWARD . 32 Vine St., Lynn, Mass.	El. Eng.	With General Electric Co.
BERRY, WALLACE NOYES . . Interlachen, Florida.	El. Eng.	Teacher, Electrical Engineering.
ELKINS, MARION GRAHAM . 10 Moody St., Amesbury, Mass.	Gen. Sci.	Graduate student, Yale University, 568 Chapel St., New Haven, Conn.
HARDING, LEE LAPLACE . . 248 Montauk Ave., New Lon- don, Conn.	High. Eng.	Instructor in Mathematics and Science, Manual Training High School.
KEYES, FREDERICK GEORGE . Brown Union, Providence.	Chem.	Graduate student, Brown Uni- versity.
NICHOLS, HOWARD MARTIN . 26 Congress St., Lynn, Mass.	El. Eng.	In Engineering Dept., General Electric Co.
SISSON, CORA EDNA . . . Wickford.	Gen. Sci.	Teacher.
WILKINSON, ALBERT EDMUND Rock, Mass.	Agr.	Proprietor, Glen Farm.

## 1907.

BARBER, ARTHUR HOUGHTON . East Greenwich.	Mech. Eng.	Student, Cornell University, Ithaca, New York.
COGGINS, CALVIN LESTER . . Sharon, Mass.	El. Eng.	Assistant Physics Dept., Ohio State University, Columbus, O.
FERRY, JAY RUSSELL . . . Marion, Connecticut.	High. Eng.	
KELLOGG, DAVID RAYMOND . 159 W. Eighth Ave., Colum- bus.	Chem.	Assistant Physics Dept., Ohio State University, Columbus, O.
KENDRICK, WINFIELD SMITH . Lynn, Massachusetts.	El. Eng.	With General Electric Co.
LAMOND, JOHN KENYON . . Usquepaugh.	El. Eng.	Graduate student, Yale Univer- sity, 103 Park St., New Haven, Conn.
LEWIS, HARRY REYNOLDS . . Woodbine, New Jersey.	Agr.	Teacher, Baron de Hirsch Agri- cultural School.
MACOMBER, MINER SANFORD . Box 215, State College, Pa.	Chem.	Instructor in Chemistry.
TUCKER, ETHEL ALDRICH . . Kingston.	Gen. Sci.	Graduate student, Rhode Island State Normal School.



THE VILLAGE STREET.





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1908-09

UNIVERSITY OF ILLINOIS  
BULLETIN OF RHODE ISLAND STATE COLLEGE.

VOL. V, NO. 1.

PRESIDENT'S OFFICE.

FOR MAY, 1909.

CATALOGUE OF THE COLLEGE.



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REPORT OF BOARD OF MANAGERS--PART III.

KINGSTON, R. I.

1909.

PUBLISHED QUARTERLY BY THE COLLEGE

MAY, AUGUST, NOVEMBER, FEBRUARY.

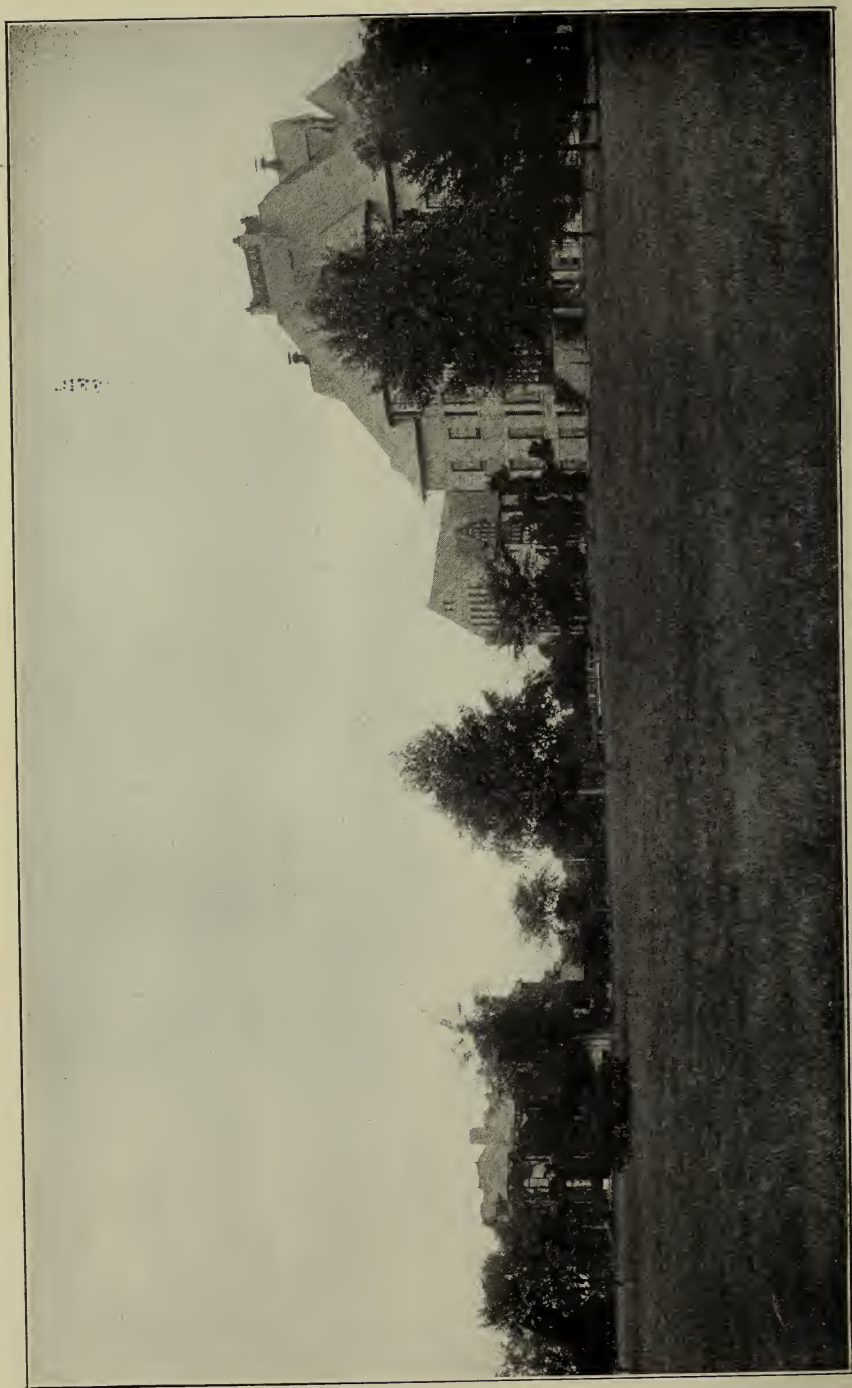
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EXPERIMENT STATION,

LIPPITT HALL,

DAVIS HALL,

# TWENTY-FIRST ANNUAL REPORT

OF THE

Corporation, Board of Managers

UNIVERSITY OF ILLINOIS

OF

PRESIDENT'S OFFICE

## RHODE ISLAND STATE COLLEGE,

MADE TO THE

General Assembly at its January Session, 1909.

---

### PART III—CATALOGUE.

Part I—General Report—is printed under separate cover.

Part II—Experiment-Station Report—is printed under separate cover.

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Providence, R. I.

E. L. Freeman Company, State Printers.

1909.





# Rhode Island State College.

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## Corporation.

HON. ROBERT S. BURLINGAME.....	NEWPORT COUNTY.
*HON. C. H. COGGESHALL.....	BRISTOL COUNTY.
†HON. CHARLES ESTES.....	BRISTOL COUNTY.
HON. CHARLES DEAN KIMBALL.....	PROVIDENCE COUNTY.
HON. THOMAS G. MATHEWSON.....	KENT COUNTY.
HON. J. V. B. WATSON.....	WASHINGTON COUNTY.
HON. WALTER E. RANGER...	STATE COMMISSIONER OF SCHOOLS, <i>ex officio</i> .
‡———	MEMBER OF STATE BOARD OF AGRICULTURE.

---

## Officers of the Corporation.

HON. CHAS. DEAN KIMBALL, President.....	P. O., PROVIDENCE, R. I.
HON. ROBERT S. BURLINGAME, Clerk.....	P. O., NEWPORT, R. I.
HON. ROBERT S. BURLINGAME, Treasurer.....	P. O., NEWPORT, R. I.

---

\*Term expired January 31, 1909.

†Appointed February 1, 1909.

‡To be elected by the Board of Agriculture.

# Report.

---

*To His Excellency Aram J. Pothier, Governor, and the Honorable General Assembly of the State of Rhode Island and Providence Plantations, at its January Session, 1909:*

I have the honor to submit herewith Part Three of the Twenty-First Annual Report of the Board of Managers of Rhode Island State College, as required by law.

CHARLES DEAN KIMBALL,

*President of the Board of Managers of the Rhode Island State College.*

## Faculty and Other Officers.

---

HOWARD EDWARDS, A. M., LL. D.,

PRESIDENT,

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*Professor of Geology.*

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*Professor of Military Science and Tactics.*

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*Instructor in Drawing.*

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*Librarian.*

WALTER SHELDON RODMAN, M. S.,†

*Instructor in Physics and Electrical Engineering.*

JOSEPHINE OSBORNE BOSTWICK, A. B.,‡

*Instructor in Languages and History.*

---

\*Died March 22, 1909.

†Leave of absence.

‡Resigned, December, 1908.

WILLIAM SAWYER SPENCER, B. D.,

*Instructor in English.*

DANIEL JOSEPH LAMBERT,

*Instructor in Poultry Keeping.*

ERNEST KENSEY THOMAS,

*Instructor in Horticulture.*

JOHN RALEIGH ELDRED, B. S.,

*Instructor in Mechanical Engineering.*

JACOB ALGER FOTTLER, B. S.,

*Instructor in Physics and Electrical Engineering.*

FRANCIS HERVEY SMITH, M. S.,

*Instructor in Chemistry.*

FLORENCE H. MYRICK, B. S.,

*Instructor in Languages.*

EMILE ARTHUR MALLETTE,

*Florist.*

LUCY COMINS TUCKER,

*Head Clerk and Secretary to the President.*

LILLIAN EDNA TOLMAN,

*Bursar.*

JENNIE ELIZABETH FRANCIS,

*Bookkeeper.*



# Lecturers.

## Poultry Course.

---

E. C. Tefit, Wakefield, R. I., POULTRY HOUSES AND POULTRY PLANTS. POULTRY AND FRUIT. Two lectures.

Prof. John Evans, Cranston, R. I., MAKING NEW BREEDS. CARE OF POULTRY. Two lectures.

Henry D. Smith, Rockland, Mass., THE PRODUCTION OF SOFT ROASTERS. DEMONSTRATION IN CAPONIZING. Three lectures.

C. N. Gallup, Brooklyn, Conn., DEVELOPING A MEAT TYPE. One lecture.

W. H. Card, Manchester, Conn., STANDARD POULTRY. CHALK TALKS. Six lectures.

Geo. A. Cosgrove, Willington, Conn., STARTING A POULTRY PLANT. EXPERIENCES WITH POULTRY. Three lectures.

J. Alonzo Jocoy, Wakefield, R. I., ARTIFICIAL INCUBATION AND BROODING. Two lectures.

Ernest L. Winslow, Apponaug, R. I., PIGEONS AND SQUABS. Two lectures.

Prof. F. H. Stoneburn, Storrs, Conn., PRESERVATION OF EGGS. BROODING AND FEEDING CHICKENS. Two lectures.

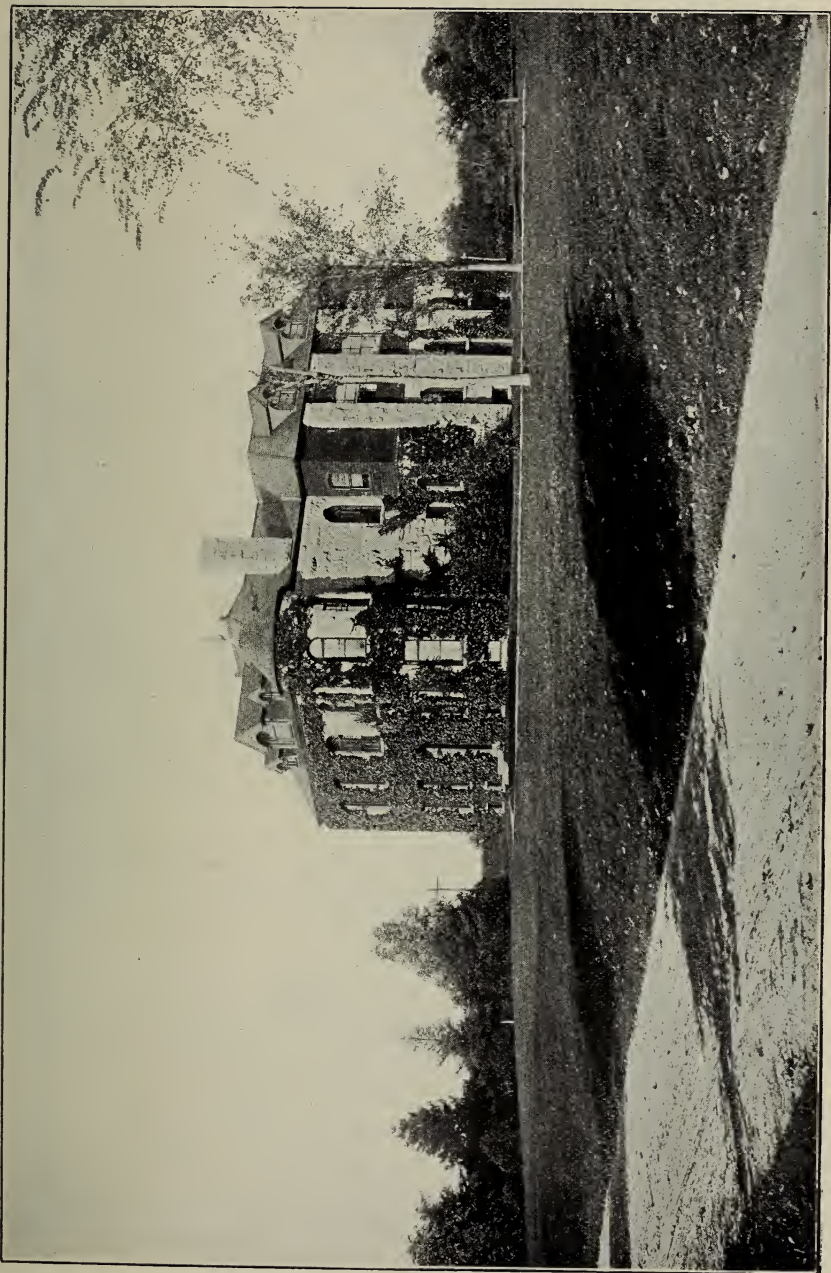
Harmon S. Babcock, East Providence, R. I., ORIGIN OF THE DOMESTIC FOWL.

Prof. C. A. Rogers, Ithaca, N. Y., POULTRY HOUSE CONSTRUCTION. (Illustrated.) EXPERIMENTS WITH EGGS. Two lectures.

Wm. F. Kirkpatrick, Experiment Station, Kingston, EXPERIMENTS WITH TURKEYS AND PIGEONS. Two lectures.

Roy H. Waite, Experiment Station, Kingston, R. I., POULTRY WORK AT THE MICHIGAN AGRICULTURAL COLLEGE.

EXPERIMENT STATION.





## Experiment-Station Council.

---

HOWARD EDWARDS, M. A., LL. D.....	} President of the College. } <i>Ex-officio</i> Member.
H. J. WHEELER, Ph. D.....	Director, Agronomy.
BURT L. HARTWELL, Ph. D*.....	Chemistry.
PHILIP B. HADLEY, Ph. D.....	Biology.
GEORGE E. ADAMS, B. S.....	Horticulture.
W. F. KIRKPATRICK, B. Agr., B. E.....	Assistant, Biology.
P. H. WESSELS, B. S.....	Assistant, Chemistry.
F. R. PEMBER, M. S.....	Assistant, Plant Physiology.
S. C. DAMON, B. S.....	Assistant, Agronomy.

---

## Other Members of the Station Staff.

J. FRANK MORGAN, M. A.....	Assistant, Chemistry.
L. F. WHIPPLE.....	Assistant, Chemistry.
WILHELM B. QUANTZ, Ph. D.....	Assistant, Chemistry.
E. A. MALLETT.....	Assistant, Floriculture.
ALBERT L. WHITING, B. S.....	Assistant, Agronomy.
ROY H. WAITE, B. S.....	Assistant, Biology.
NATHANIEL HELME.....	Meteorology.
GRACE E. HOVEY, B. S.....	Stenographer and Accountant.
E. ELIZABETH MEEARS.....	Stenographer and Librarian.
ZILLA M. CONSTABLE, B. S.....	Stenographer and Clerk.

---

*The publications of the station will be mailed free, upon request, to all residents of Rhode Island to whom they are of interest. Suggestions as to how the station can aid the state are gladly received. Visitors are always welcome. Railway station, telegraph, express, and post-office—Kingston, Rhode Island. Long-distance telephone, Narragansett Pier Exchange.*

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\*In charge of experiments in plant physiology and animal feeding.

1910.

JUNE.		MAY.		APRIL.		MARCH.		FEB.		JAN.			
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## College Calendar.

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Friday, June 18, 1909.....	Entrance Examinations, 9 A. M.
Tuesday, September 14.....	Chapel Exercises, 8:15 A. M.
Registration, examination of entering and conditioned students, 9 A. M.	
Wednesday, September 15.....	Recitations begin, 8:35 A. M.
Tuesday, November 2.....	Election Day.
Thursday, November 25.....	Thanksgiving Day.
Wednesday, December 22, 4:15 P. M. }	Christmas Recess.
Tuesday, January 4, 1910, 8:15 A. M. }	
Friday, January 28, 12 M.....	First Term ends.
Wednesday, February 2.....	Entrance Examinations, 9 A. M.
Thursday, February 3.....	Second Term begins, 8:15 A. M.
Registration, 9 A. M. Recitations begin, 1:30 P. M.	
Sunday, February 13.....	Day of Prayer for Colleges.
Tuesday, February 22.....	Washington's Birthday.
Friday, May 13.....	Arbor Day.
Monday, May 30.....	Memorial Day.
Sunday, June 5.....	Baccalaureate Address.
Wednesday, June 8.....	Class Day Exercises.
Thursday, June 9.....	Commencement Exercises.
Friday, June 10.....	Entrance Examinations, 9 A. M.



# Rhode Island State College.

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## Foundation.

The college is one of the so-called land-grant colleges. As such, its object is to "teach such branches of learning as are related to agriculture and the mechanic arts . . . in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." Further than this, it has a well-defined investigative purpose in its experiment station, organized as a department of the college and endowed by the general government.

The resources of the college are as follows:

(1) The interest on \$50,000, which was the net amount received by the state from the sale of its scrip for 120,000 acres of land, granted by the general government in 1862. This fund came to the college in 1894.

(2) The annual appropriation of \$15,000 from the general government, under what is known as the Hatch Act of 1887. This fund is exclusively for experimental purposes.

(3) The annual appropriation of \$25,000 from the general government under the second Morrill Act of 1890. This fund is for teaching the subjects distinctly named and specified in the act, as follows: "to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

(4) The funds coming from the general government to the state under the Adams Act of 1906, yielding \$7,000 in 1906, and increasing each year by \$2,000, until the whole shall amount, in 1910, to \$15,000. This fund is exclusively for experimental purposes.

(5) The funds from the general government under the Nelson Amendment of 1907, amounting on July 1, 1907, to \$5,000, and increasing yearly thereafter by \$5,000 until the whole, in 1911, will amount to \$25,000. This amendment is simply an extension of the 1890 Morrill grant and carries the same restrictions.

(6) The annual maintenance fund from the state of \$25,000, used for all the purposes for which the funds of the general government can not be used: *e. g.*, for extension work; for executive and administrative work; for heating, lighting and maintenance of buildings; for the teaching of modern languages other than English, of history and civics; for student labor, maintenance of grounds, roads, etc.

The college was founded in 1888 as an agricultural school. In 1892 it was incorporated as a college. The courses of study have been on a college basis since 1892; the requirements for a degree were raised in 1898; and the curriculum was again thoroughly revised during the years 1906-07 and 1907-08. The course in home economics for young women was introduced in 1908.

### Object and Organization.

The function of the Rhode Island State College is to aid in fostering the industrial life of the state, at least in so far as pertains to agriculture, manufactures, transportation, and home-making. This it does in three ways: 1. By the investigation and discovery of new truth, more or less directly applicable in the industries. 2. By the direct distribution of industrial information to the people. 3. By the organization and administration of definite courses of instruction designed to fit young men and young women for effective work in the industrial pursuits.

The first of these duties is performed by the

### Experiment Station

for a description of the work of which the reader is referred to the report of the director, constituting Part II of the Report of the Board of Managers for the current year. A statement of its staff organization may be found on page 9 of this catalogue.

The experiment station takes part, also, in the second phase of the college activities, by distributing its bulletins to all that desire and apply for them. In order, however, more fully and directly to bring the college and its work into touch with the people, a

## College Extension Department

has been organized, and is in active operation.

The purpose of this department is to carry the instruction of the college to those who can not come to it for study. Whenever necessary and possible, visits will be made to any part of the state to examine farms, orchards, and gardens; to identify injurious insects or plant diseases, or give instruction in regard to methods of treatment; or to examine soils with a view to suggesting remedies for lack of fertility. General plans for laying out farms and for carrying out the details of any farm operations will be given the fullest consideration. The college is open for consultation at any time in regard to any problem of the farm, garden, or orchard. The fullest correspondence is invited, and conscientious consideration will be given to every letter received.

Whenever possible, arrangements will be made for lectures or demonstrations by members of the college faculty or experimentation staff when called for at any agricultural meeting or neighborhood gathering. Coöperative experiments will be arranged to help the farmer solve the problems which are peculiar to his own farm or his portion of the state, and for the purpose of teaching some of the principles which have been worked out at the experiment stations of this and other states. As part of the work for the present season, such experiments will be outlined along the following lines: 1. Remedies for the San José scale and other injurious insects and plant diseases. 2. Treatment of greenhouse insects with hydrocyanic-acid gas.

From time to time, as funds will permit, special lecturers will be engaged to address granges, horticultural societies, and other organizations interested in agriculture, on various timely topics. Such lectures will generally be given free of charge. Members of the faculty have prepared lectures on various subjects which they are ready to deliver at any place in the state. These lectures are free, the only charge being the traveling expenses of the speaker.

An important part of this extension work is to be the encouragement of home study and the conducting of correspondence courses. For the present, time and funds will not permit the carrying out of this plan, but advice will be given to any person wishing to take up home study regarding courses of reading, books, and other literature which may be necessary in connection with such work.



Another important phase of nature study, which aims to interest the young people of the schools in things of nature and of the farm, is

## The Nature Guard.

The Nature Guard is an organization of young people formed for the purpose of awakening in its members a livelier interest in the things of outdoor life. Its object is to stimulate the power of observation and to lay the foundation for a simple, rational education, which shall give the individual a love for nature and a sympathy with his environment, and furnish him with the means of making life more useful and more enjoyable, whether lived in the country or in the city.

The boys and girls in one school, or in one room, if the school is graded, form themselves into a band and elect officers, which are a spy and a guardian. This band fixes its own time for meeting and adopts its own methods of procedure. Enrollment cards to be signed and returned are furnished from the college. A charter will be sent to each band upon completing enrollment. Each member who sends in an enrollment card will receive an appropriate lapel button indicating that he belongs to the Nature Guard. At the end of the year, a neat certificate will be forwarded to all who have sent in reports during the year.

A printed leaflet is issued monthly during the school year, and a copy is sent to each member of the Nature Guard, and also, on request, to individuals who are interested. The purpose of the leaflet is to furnish a stimulus to nature study by making each month some suggestions bearing on the subject. Monthly reports, giving observations of their own, are requested from the members. Supplemental leaflets for teachers will be issued from time to time, the object of which will be to call attention to the latest views and methods in nature study.

In connection with nature-study work, advice and assistance will be given to schools, to children's organizations, and to individual boys and girls who wish to carry on work with children's gardens. Where a number of gardens are placed together, as in schools or in boys' clubs, the college will send an instructor to teach methods of preparing the ground, planting, cultivating, and harvesting garden crops. Individuals will be given advice by circulars and by correspondence. Application has been made to the Washington County

Agricultural Society to grant premiums to children for seed and plant collections, and for exhibits of a few vegetables which can be easily grown, either in school or home gardens.

Further notes in regard to this work are given in leaflets and circulars issued by the extension department, and correspondence is solicited from any one who may be interested.

## The College as an Educational Agency.

In its third form of activity, the purpose and work of the Rhode Island State College is to give college training and culture to young men and young women, not in spite of, but through and with vocational studies. Its courses are intended, first of all, to make the student a self-supporting unit in society, a positive force for social advancement, able and willing not only to maintain himself, but also to carry something of the common social burdens that always weigh upon the thoroughly efficient worker.

### I. The Four-Year Courses.

To this end certain college courses, intended to fit men and women for efficiency and leadership in well-defined life-activities, have been prepared. These courses are all founded upon training in mathematics, pure and applied; the English language as a means of intercommunication; and the sciences that deal with matter, force, and life as applied more directly to agriculture, the mechanic arts, and home economics. In the pursuit of these vocational studies, the effort is to accumulate an array of knowledge that, in the activities of industrial life, must be always practically serviceable, and, at the same time, to gain a disciplinary training both of brain and of muscle and nerve that makes for practical effectiveness. These courses, moreover, recognizing that a college course should include not only intellectual training and the knowledge and skill requisite for bread-winning, but also preparation for citizenship, for moral and social life, have intertwined with the vocational work and study previously mentioned, the subjects that most directly make for culture and morality—history, economics, literature, languages, ethics, psychology, and sociology. These are ranked as of equal importance with the bread-winning studies.

The college courses just discussed are four years in length, and base themselves directly on the work of the four years of the high schools.

They thus become an integral part of the school system of the state. Young men and young women, citizens of the state and having requisite high-school training, are admitted to these courses without charge for tuition.

The four-year courses thus offered are the agricultural course, the engineering course, the teachers' course in applied science, and the course in home economics.

### THE AGRICULTURAL COURSE.

The agricultural course is intended to give thorough preparation for taking charge of and operating a piece of landed property. Its work is centered around instruction and practice in horticulture, general farming, and animal husbandry (more especially as applied to dairying and the poultry industry). The course consists of practical work combined with thorough study of the sciences bearing directly on such work, viz.: botany, chemistry, geology, zoölogy, anatomy, physics, and entomology. In addition, it embraces the culture and mental discipline arising from the study of mathematics, English composition and rhetoric, history, drawing, modern languages, economics, and English literature. The course is planned to give the student a full and rounded development as worker, as citizen, and as man.

All agricultural students will follow the same work in the first two years; but, at the beginning of the Junior year, with the required work for all students in the course, three optional lines of work are offered, one of which must be selected by the student and followed until graduation. The three lines offered are agronomy, horticulture, and animal husbandry. No option and no subject will be given for which a number of students sufficient to warrant giving it has not applied. For tabulated course, see pages 34-37.

### THE ENGINEERING COURSE.

The engineering course has the same requirements for entrance, the same duration, and the same general plan as the agricultural course. Students will follow the course as laid down until the second half of the Sophomore year, at which time, as with the agricultural course, students must elect one of the four optional lines offered, viz.: mechanical, electrical, civil, and chemical engineering. Any line of

work for which the number of applicants is insufficient to warrant giving it, the college reserves the right to withdraw.

The course is arranged to prepare young men for skilled and efficient work in the great manufacturing and commercial industries of the state; in the development of electricity as a motive force and in its thousand-fold other applications to the arts and to the life of society; in the activities of the new road-building era upon which we are entering; and in the applications of chemistry as now found in the great industrial establishments. At the same time, in this as in all other courses, it is not forgotten that the man is not a mere lever in his own machinery, and the effort after breadth and completeness of life is steadily maintained. For tabulated course, see pages 34-37.

### TEACHERS' COURSE IN APPLIED SCIENCE.

This course is intended to prepare persons to teach in industrial schools those branches of applied science that pertain especially to agriculture and the mechanic arts. In such schools it has been found of especial importance that the teachers be trained in an environment of current thought sympathetic with the industrial applications of science and intelligently appreciative of the methods and problems of such work. In response, therefore, to the need, and in accordance with an expressed purpose of the new fund from the United States Government, we have constructed this course. The effort has been to make the course effective for its purpose, while at the same time retaining for it that breadth and that cultural influence that are necessary to fit the whole man or woman for social life and are especially important in persons who, as teachers, will exercise large personal influence over immature youth.

The general plan of the course is the same as that of the other two courses just described. It opens to the student, at the beginning of the Junior year, three options, one of which he must select in conjunction with certain studies required of all. For tabulated course, see pages 34-37.

### THE COURSE IN HOME ECONOMICS.

The aim of modern education is to develop character and efficiency. The efficient person is the one capable of self-support—the productive citizen. For efficiency the individual needs several things. He



must have health of body and mind; the control of materials and forces, which comes only from the knowledge of the things with which he must deal, and a power of separating as well as deducing cause from effect. He must have the ability to do, which involves reasoning power, perseverance and self-control. The recognition of the need for a direct teaching of these things is the basis of the universal democratic education of to-day for industry, agriculture, and the home.

It is now universally accepted that no other education is as important for the average man as the education which will teach him how to earn his own livelihood. Just so it needs to be accepted that no other learning is as important for the average woman as that which will make her efficient for her vocation, which for most women is the administration of household affairs. If in the training for citizenship and in the upbuilding of character, the home is the fundamental factor, it is inevitable that home economics must bear an organic part in the general scheme of education. For it is an understood fact that the welfare of a country is threatened when men and women are not trained and ready for the positions of trust and responsibility which fall to their share. This is the great force behind the onward march of so-called practical education, in which to-day the subjects grouped under the name of home economics bear so important a part.

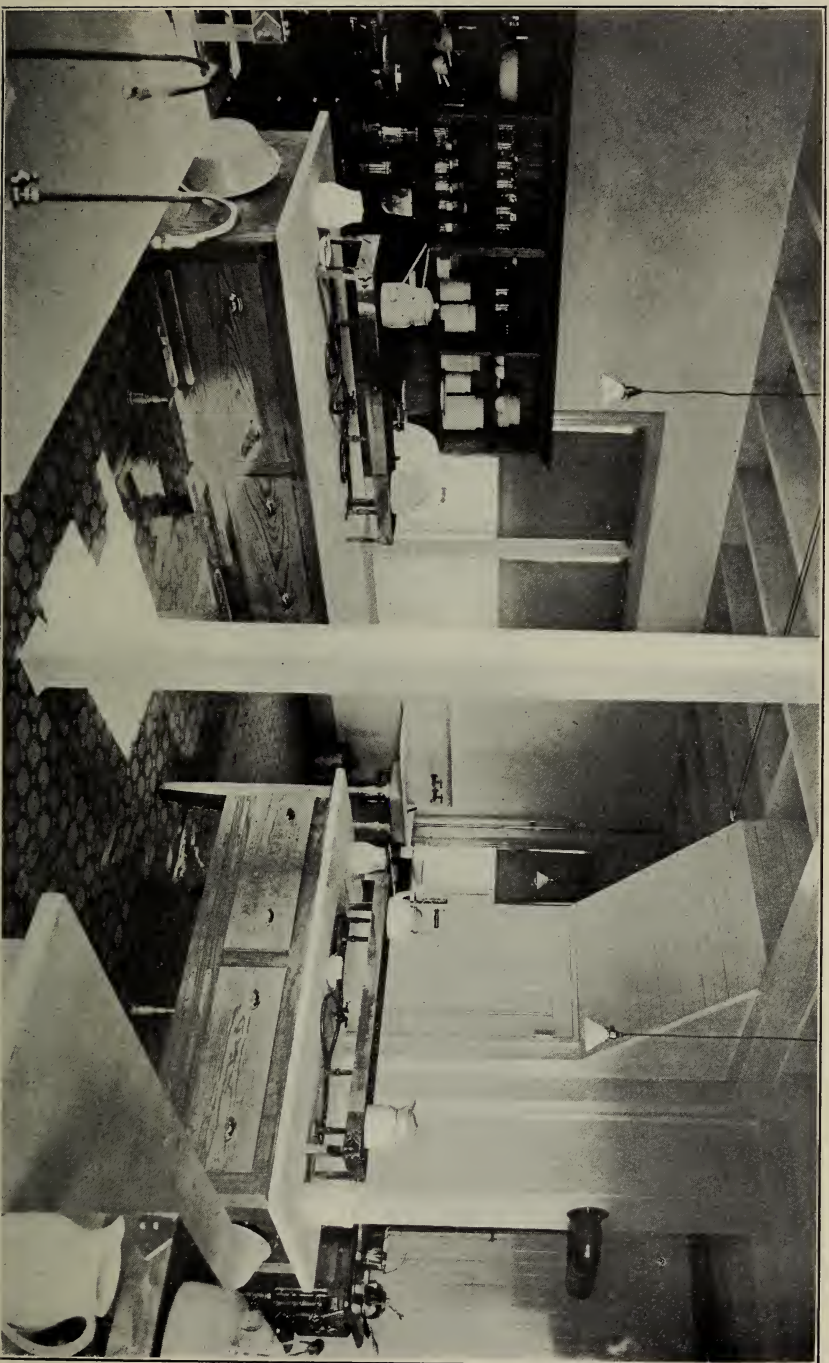
In the various bills presented to Congress in behalf of national aid for such forms of education, these paragraphs appear:

"Our most important and racial institution—the home—can be developed along with other institutions only as we give to it the discoveries of science and build it up through education. It is not enough that America has homes averaging better than homes of other parts of the world; they should be very much better."

"Every city and town should offer opportunity to girls to gain a knowledge of the production and preparation of food and clothing, of lighting, heating, water supply, and sanitation, of household care and decoration, such as would mean a distinctly higher standard for our homes."

"There is the greatest fear that such schools be thought below the standard of our classical schools, and until we dare to take the stand that it is all a question of relative values, and that Latin and mathematics have not as much educational value for certain girls as house-





HOME ECONOMICS LABORATORY.



hold science and art have, these schools will probably not perform the greatest service of which they are capable. When we are wide awake to the fact that the solution of our domestic difficulties is dependent on a greater knowledge of production and its wise direction, perhaps we shall be ready to say that learning to do things and learning to understand the reason for doing things will have as great a cultural value as the study of Homer and solving original problems in geometry."

It is to meet the demands for such practical education that the home economics department has been established here. It is so planned as to give a general view of the household in society, and to provide such training as will lead to more healthy, happy, intelligent and economical administration of the home as a social unit. It is also designed to aid in fitting such students as desire to enter special fields of domestic activity in institutional and educational lines of work.

The courses of instruction are planned to meet the needs of two classes of students: (a) those who may be specializing in other lines of work but desire a general knowledge of the principles and facts of home economics; (b) those who wish to specialize in the various lines of this work.

The general course is designed to provide an education in those branches that especially serve the needs of women students, and to meet the demands of the day for training in social and sanitary science. Although the main work is scientific and technical, the importance of artistic and literary training for home life has not been neglected. It is recognized that all the knowledge of right living to be gained through all the avenues of learning is needed to assist the student to a broader conception of citizenship as well as in performing the manifold duties of daily life.

The courses include instruction in the planning, sanitation, decoration, and care of the house and its administration on the economic side; the preparation of food from the scientific and economic points of view; the study of nutrition; the discussion of problems of personal and public hygiene and instruction in the care of infants and young children.

The entrance requirements are the same as for the other college courses. Of the one hundred and sixty credits required for graduation, thirty-three are required in the home-economics department. Three groups of electives are offered. Students are expected to take

the course as prescribed on pages 34-37, with choice of options; but when entered in other courses in the college, they may elect certain work in the home-economics department, under direction of the head of the department.

#### REQUIRED WORK IN HOME ECONOMICS.

1. House Construction, Sanitation and Cost.....	2½ credits.
2. Principles of Selection and Preparation of Food.....	4 "
3. Household Hygiene.....	1½ "
4. Economic Uses of Food.....	5 "
5. Personal Hygiene.....	2 "
6. Dietetics.....	2 "
7. Home Decoration.....	2 "
8. Food Supplies and Dietaries.....	3 "
9. Public Hygiene.....	1 "
10. Textiles.....	2 "
11. Child Hygiene.....	2 "
12. Household Art.....	2 "
13. Study of the Family.....	2 "
14. Household Administration.....	3 "

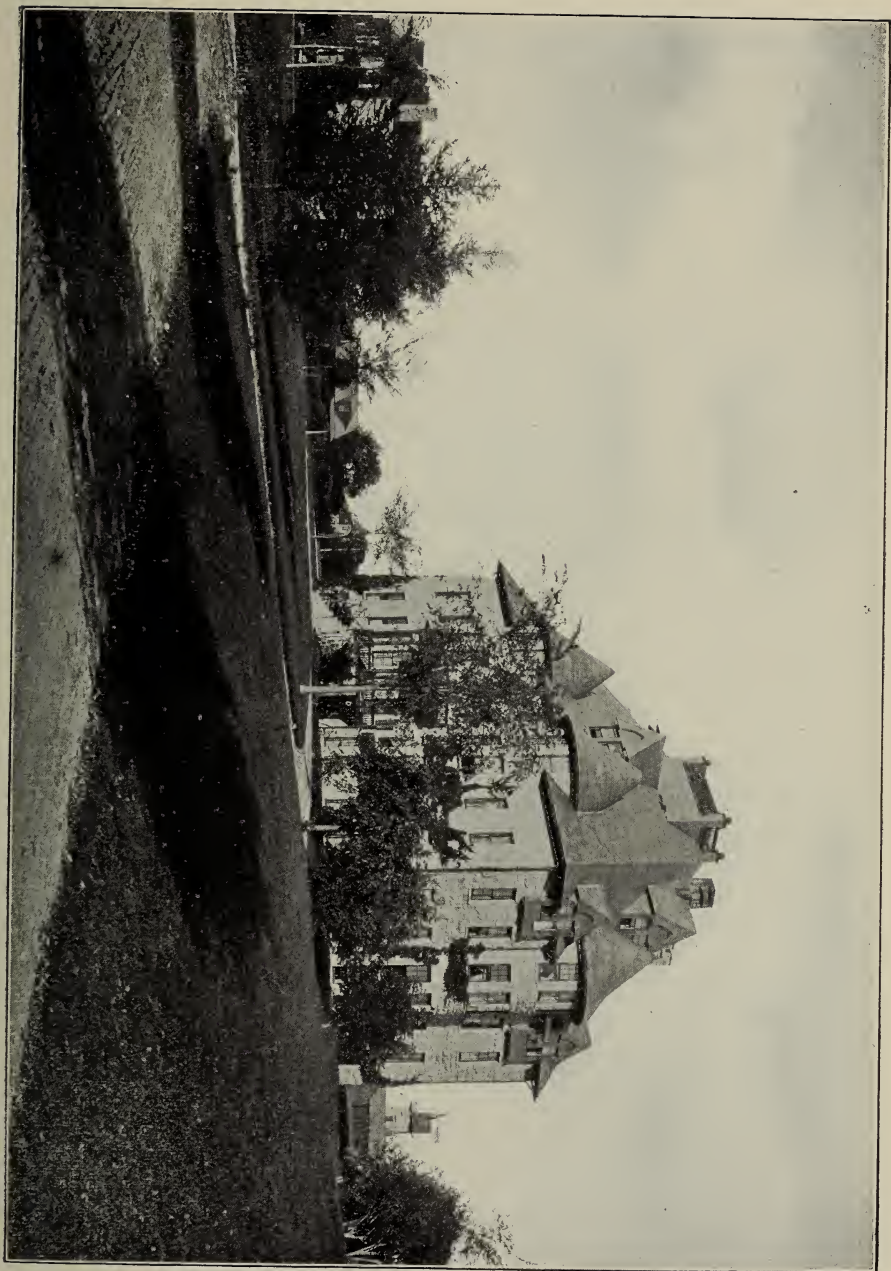
#### OPTIONS.

Group A. Education and Home Economics.....	14 credits.
" B. Agriculture.....	14 "
" C. Elective.....	14 "

## II. Short Courses in Agriculture, in Mechanic Arts, and in Home Economics.

There is a large class of young men and women who, unlike the more fortunate young people that are able, after completing the high-school work, to go through a full four-years' college course, find themselves compelled, sometimes with a high-school course as preparation, much more frequently, however, without such training, to plan for entrance into industrial life by the shortest and quickest preparation that will give them the elementary knowledge and skill requisite. For such persons we have arranged a short course in agriculture, one in mechanic arts, and special work in home economics. These courses are each two years in length; they require for entrance only that degree of training represented by a common-school education; *they are in no sense preparatory to the corresponding college courses, and they do not, either directly or indirectly, lead to an academic degree.*





DAVIS HALL.





A certificate, however, will be awarded on completion of one of these courses.

They are intended to be intensely and dogmatically practical, giving facts and processes without attempting to explain and correlate these by referring them to their basis in scientific theory or investigation. Moreover, each part of the course, and each subject, is in a way independent; so that the student who remains for any part of the course, say one year or even less, will be able to realize a definite acquisition, a certain distinct fitness, that he did not before possess. It is hoped that, after a little, the certificate may come to have among farm owners and among the employers of labor in the factories and shops of the state, a certain well-defined value as commendatory of the persons holding it. For tabulated statement of courses, see page 38.

### III. Special Poultry Course.

For many years this college has offered a winter course in the poultry industry. In fact, the first poultry course to be offered in the United States was offered here eleven years ago. The college will continue to offer a course during the winter term.

### Requirements for Admission to the Degree Courses, 1909.

The requirements herein mentioned are reckoned in "points." A "point" is the amount of work that a good New-England high school exacts of its pupils during one recitation period per school-day for the school year. Two laboratory periods are reckoned as equivalent to one recitation period.

For the year 1909-10 the requirements will consist of eleven such points; for the year 1910-11, the minimum number will be thirteen points; and for the year 1911-12, fourteen points.

The entrance subjects are divided into two groups named below, as Group A and Group B. The subjects named in Group A must, with one exception, all be offered, and to the minimum extent represented by the points attached. They make a total for engineering candidates of nine points, for others of eight and one-half points. Group B names the list of subjects from which the necessary additional points may be offered; opposite each subject is stated the maximum number of points on each subject that will be accepted.

Where the same subject is named in both groups, the total number of points that may be offered on the subject is the sum of the points stated after that subject in the two groups. The necessary additional number of points from Group B may be made up by any combination of points or fractions of points not below two-fifths. For instance, for 1909, a candidate may make up his entrance requirements by offering records showing passing grades on

Subjects of Group A.....	8 $\frac{1}{2}$
Physiography.....	$\frac{2}{5}$
History.....	$\frac{3}{5}$
German.....	$\frac{3}{5}$
Drawing.....	$\frac{3}{5}$
Shopwork.....	$\frac{1}{2}$
Total... ..	11 $\frac{1}{5}$

Examinations for entrance will be held at the close of the school-year in June, and also at the opening in September, as announced in the calendar, page 11. On any or all of the subjects named in both groups satisfactory standings from any reputable high school will be accepted in lieu of examinations, on presentation of a copy of the student's full record in the high school, showing clearly the nature of the work pursued in each subject, time devoted to it, and grade of work done. This copy must be duly signed by the proper official of the school, and must be accompanied by a certificate of good moral character. The latter, however, may be from any reputable source. On application, blanks showing definitely the full nature of the information desired from the high school will be furnished.

#### GROUP A.

(These subjects, with the exception stated, are required of all students to the extent indicated by the number of points named in each case.)

English.....	3
Algebra.....	1 $\frac{1}{2}$
Plane Geometry.....	1
History.....	1
Physics.....	1
French or German.....	1
Solid Geometry—For engineering students only.....	$\frac{1}{2}$

## GROUP B.

(From this group points, in addition to those of Group A, sufficient to make up the whole number of points required for the year will be required. Any combination of points, including units or fractions not less than two-fifths, will be allowed.)

English.....	1
Foreign Language.....	3
History.....	1
Civics.....	1
Physiography.....	1
Botany.....	1
Zoölogy.....	1
Chemistry.....	1
Geology.....	1
Physiology.....	1
Drawing.....	1
Farm Practice.....	$\frac{1}{2}$
Domestic Science.....	$\frac{1}{2}$
Shop Practice.....	$\frac{1}{2}$
Solid Geometry—For other than engineering students.....	$\frac{1}{2}$

From and after the current college year (1908–09) no purely preparatory or Sub-Freshman students will be enrolled. In order, however, to provide for those now enrolled (1908–09) in the Sub-Freshman work and to facilitate the passage to more extended entrance requirements, students will be accepted with as many as four conditions on entrance requirements. Those having more than two such conditions will be registered with the special students. All conditions will be made up by assignment to coaching classes provided by the college free of expense. For deficiencies in the subjects of Group A one coaching class in each subject will be provided. For deficiencies in the subjects of Group B, such classes will be provided as shall seem best under the circumstances.

Candidates not presenting satisfactory standings from reputable high schools will be examined, over ground corresponding to the number of points attached, on all the subjects of Group A and on such of Group B as they may offer.

In algebra the candidate should have mastered Wentworth's school algebra or the equivalent, through the subject of quadratics. He should possess a clear knowledge of the whole subject of plane geometry, as presented in Wells's book, or an equivalent. The can-

didate must show, also, thorough familiarity with arithmetic in all its processes.

In English there will be two parts to the examination; one testing his technical knowledge of the English language, his vocabulary, and his power of effective expression, the other determining his acquaintance with masterpieces of English literature. In the first, the candidate will be required to write an essay of some four hundred words, selecting his subject from a list submitted by the examiner, all of which will be taken from common life and bear upon things with which the candidate is familiar. The essay will be graded upon the plan, the method of developing the sub-topics, the consecutive-ness of the thought, the control of the English sentence, and the aptness and range of expression. Questions on simple matters of grammar and rhetoric will also be required. The second part of the examination—that on English literature—will be conducted after the manner and on the subjects prescribed for entrance to New-England colleges. On request, the list of books prescribed for 1909–10 will be sent; or the list may be obtained from the nearest high-school principal.

### Degrees.

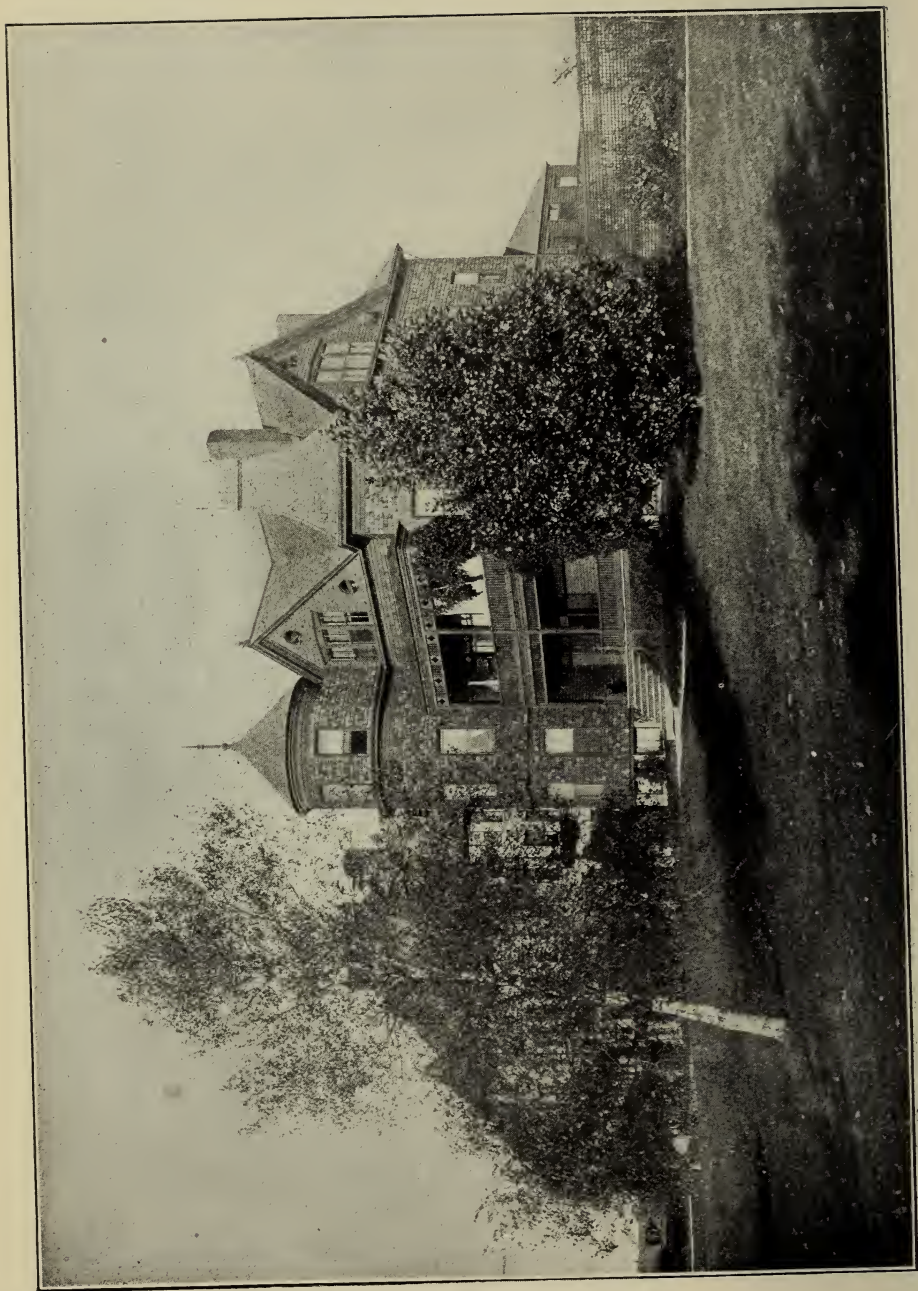
The college confers two degrees. The degree of Bachelor of Science is conferred upon a student who has completed one of the four-year courses outlined on pages 34–37. The degree of Master of Science is conferred upon those holding a Bachelor's degree from this institution, in regular order, or from other institutions having equal requirements, upon the completion of one year of resident study, the presentation of a satisfactory thesis in applied or economic science, and upon passing examinations in the subjects pursued. Persons wishing to apply for the Master's degree should write to the Committee on Graduate Study for further details.

### Teachers' Certificates.

The following resolution recently adopted by the Board of Education of this state is self-explanatory: "The certification of the president (of this college) that an applicant for a teacher's certificate has pursued a secondary school course of four years, subject to the approval of the committee on qualifications, and in addition thereto has pursued a four years' collegiate course in the Rhode Island







BOARDING HALL.

College will be received as evidence of the required qualifications in scholastic subjects for a teacher's certificate of the first grade."

### Opportunities Offered to Women.

The course in home economics is especially designed for women, although all other courses are open to them. Special waiting and study rooms are provided for the women who are day students. On and after September, 1909, commodious quarters for women boarders will be provided on the college grounds.

### Expenses.

Tuition is free to residents of Rhode Island. To non-residents of the state, tuition is \$15.00 a term or \$30.00 a year.

The regular college expenses are tabulated as follows:

Board, \$3.50 per week.....	\$126 00
Room-rent, including heat and light.....	30 00
Incidental fee, \$4.50 per term.....	9 00
Laboratory deposit, \$5 per term.....	10 00
Uniform for military drill.....	16 00
	<hr/>
	\$191 00

The first four items must be paid quarterly in advance; that is to say, \$43.75 will be required at the opening of the year, September 14, 1909, and also at each of the following dates: November 16, 1909, February 3, 1910; and April 7, 1910. Non-residents of the state should add to this sum \$7.50 for tuition each quarter. In order to secure dormitory accommodations, the student is required to deposit one dollar with the application, the dollar to be credited on the fall-term room-rent. If the student fails to take the room, the dollar is forfeited. The uniform also must be paid for at the opening of the college year in advance. Against the laboratory deposit will be charged all material used in the various laboratories, and the destruction, breakage, or marring of apparatus and tools. If anything remains after such deductions have been made, the said remainder will be refunded. If, on the other hand, the charges shall at any time exceed the deposit, the student will be required to cover the excess by a further deposit.

Nothing has been said concerning books. The probable cost of these will be from \$15.00 to \$30.00 per year. For miscellaneous expenses connected with college life, students should add a sum varying from \$10.00 to \$25.00. A fee of 50 cents will be charged for each examination to make up a condition. Graduates pay the cost of diplomas, \$5.00. *No diplomas will be issued until all term bills have been paid.* Room-rent and incidental deposit will not be refunded on withdrawal during the quarter. Students not taking any laboratory work will not be required to make a laboratory deposit. An athletic tax levied by the students upon themselves will be taken at the college office at the times set for college dues.

UNIFORM.—Every able-bodied male student is required to drill and to wear a uniform. The uniform must be paid for immediately on entering the college, when the students are measured for the suits. When worn only on drill and properly cared for, one uniform may last two or more years. The student may, however, wear his uniform all the time.

TRANSPORTATION.—The college conveys students daily to and from the railroad station free of charge. Once at the beginning and end of each term, a team conveys trunks to and from the station.

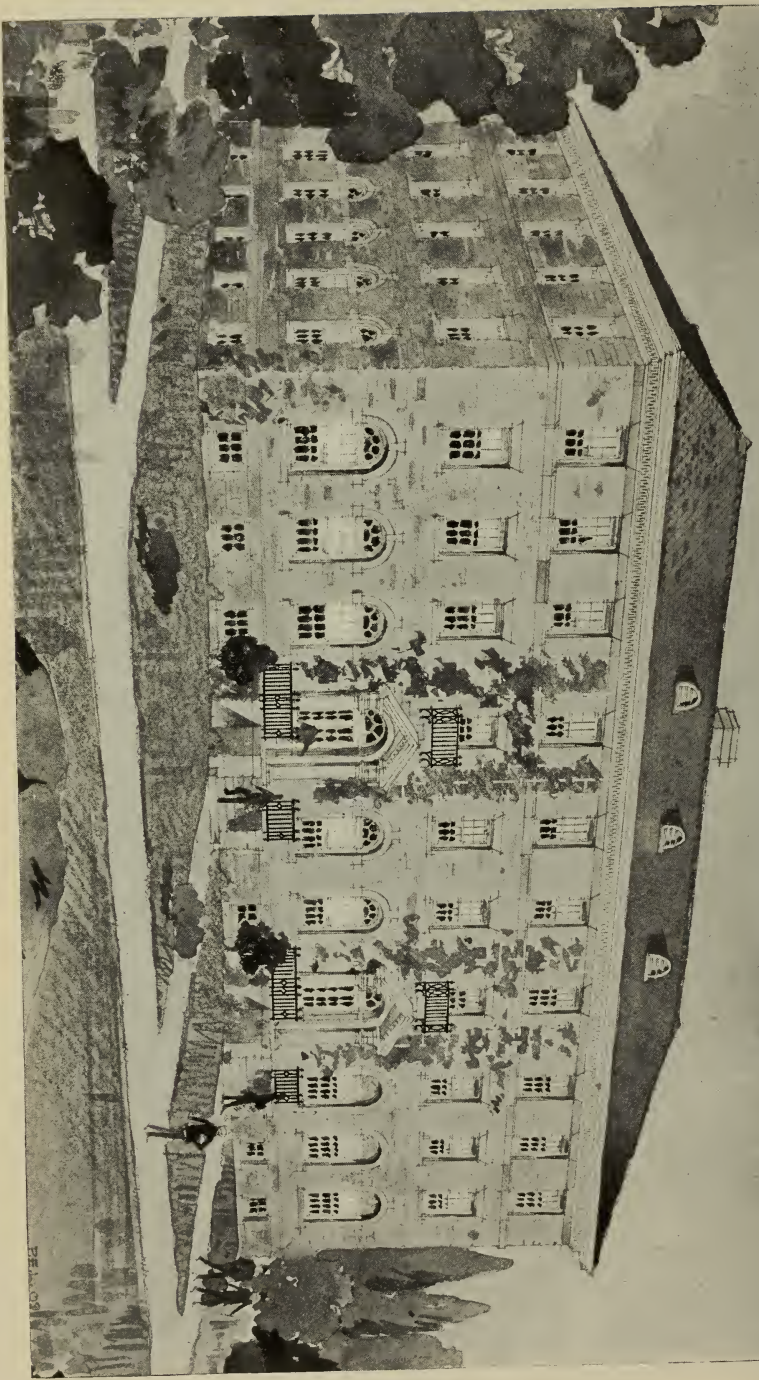
BOARDING STUDENTS.—The price of board for 1909-10 will be \$3.50 per week. Students who *leave regularly every week* on Friday afternoon and return Monday morning will pay \$2.50 per week. No other reduction on board is made for less than two whole days' absence at one time, and then only when written notice is given in advance. No person will be admitted to the dining-room until he has secured from the bursar a meal ticket, on the back of which will be found the rules governing the holder of such ticket. After this ticket is issued, all charges for board will be made in accordance therewith unless the student has the ticket changed by the bursar. Arrangement of charges for meals sent to students' rooms for any cause must be made in advance.

FURNITURE.—The rooms in the women's dormitory are provided with necessary furniture, including mattresses, but no other bedding material. *All students in the men's dormitory are required to supply their own furniture and bedding.* The necessary furniture may be obtained at the college when desired. A room may be furnished for from \$8.00 to \$10.00. Iron bedsteads three feet wide are included





NEW DORMITORY — IN PROCESS OF CONSTRUCTION.



PEL 08

under room-rent. The furniture, if properly kept, may be sold, when the student leaves, for one-half to three-fourths the original price.

**NEW DORMITORY.**—The new dormitory for men is now in process of erection and is under contract to be completed September 1, 1909. It will contain comfortable and well lighted and ventilated rooms for one hundred men students, lodged mainly two in a room. There will be a large dining-hall where all may be seated at one time, with a modern kitchen and proper accessories. It contains also a handsome social room, an assembly room, and a basement for bowling-alley, etc. The rooms will be rented on the same terms and under the same conditions as were offered last year. Students especially desirous of rooming in the dormitory are advised to make their applications at once.

**ROOMS IN THE VILLAGE.**—Arrangements have been made for rooms in the village of Kingston, some of these being under college management and others in private houses. In the case of the former, room-rent will vary from 60 cents to \$1.00 per week, with stoves and bedsteads furnished, the student to provide other furnishings and fuel himself. Furnished rooms in private houses for students who occupy them throughout the college year range from \$1.25 to \$2.00 per week.

**COLLEGE STORE.**—Students will be required to pay cash at the store for all books and other supplies.

**DAMAGE FUND.**—All damage not due to ordinary wear will be assessed to students as follows:

1. Students at once acknowledging damage and agreeing to pay for same will be assessed actual cost of repair, including labor.
2. Students found guilty of such damage but not acknowledging and settling for the damage will be charged double the cost of repair.
3. Students will be responsible for damage in their own rooms.
4. Damage that is not settled as above may be assessed to all the students or to a group of students, pro rata. Each case and the amount of assessment will be considered on its merits.

### Employment at the College.

There is a certain amount of labor about the college buildings, on the farm, at the experiment station, and in the offices and labora-

tories, for which students will be employed whenever it is feasible to do so. Industrious students frequently earn an amount which aids considerably in paying their expenses,—a sum varying from \$25.00 to \$125.00 per year.

In view of the fact, however, that the amount of this work is strictly limited and that it is not the policy of the college to create such work, and, furthermore, because of the increasing number of students and the more frequent applications for student labor, it seems desirable to state the conditions under which this work will hereafter be assigned.

1. Application for work must be made on a blank which will be issued to the student on request. *Persons desiring such work must, if under age, bring a statement from parent or guardian certifying to what extent the student must depend upon himself for support.* It must be borne in mind that the student can not make this certification for himself. Application for work, however, under no circumstances creates a claim on the college that work shall be assigned the applicant.

2. At a certain time before the opening of the fall term all applications for work will be considered, and appointments will be made after due consideration of

- (a) Capability for the work.
- (b) Trustworthiness.
- (c) Good record as a student.
- (d) Need for financial aid.

[NOTE: Other things being equal, preference will be given to residents of the state, to upper-class students, and to those who room and board at the college.]

3. Such appointments are subject to revocation at any time, for

- (a) Incompetency.
- (b) Unfaithfulness in discharge of duty.
- (c) Misconduct or disloyalty to the institution.
- (d) Bad record in studies.

4. Such appointments must be recognized as

- (a) A mark of trust and responsibility.
- (b) A real and vital part of one's training for promptness, for initiative, and for leadership.
- (c) One of the very best criteria the teacher has in determining his estimate of the student's character, both for his own guidance and for recommendation to employers.







THE VILLAGE CHURCH.



5. Payment for services will vary from ten to fifteen cents per hour, according to the grade and difficulty of the work and the experience of the student. In general, students should not expect more than ten cents an hour for the first year. It is a rule of the college that any student desiring to perform more than twenty hours of student labor per week must secure permission from the faculty council. In the future, it may be necessary to limit the amount which any one student may receive for student labor.

Some young people have the impression that the college offers such opportunities for self-help that it is safe to enter with practically no funds, relying solely on money earned while here. In exceptional cases this may be done, but prospective students are strongly advised not to enter until they have at least \$100.00 at their disposal. A student who has to make his own way must also plan to work steadily during both the short and long vacations. Occasional vacation work at the college can be furnished to students, but as a rule they should look elsewhere for this class of work.

### Religious Influences.

This college is a state institution, and, consequently, the widest latitude is given to all creeds and forms of religious belief. Simple chapel exercises are held, and are conducted by the president or some other member of the faculty. While in the main attendance is not compulsory, it is desired and expected that all students will attend chapel. On one day of each week special exercises are held which all are required to attend.

A branch of the Intercollegiate Young Men's Christian Association is doing active work among the men students, holding a meeting every Sunday throughout the year. This association conducts courses in bible study and is taking the lead in endeavoring to establish sound and high ideas of college life.

The Young Women's Christian Union is doing a similar work for the young women.

The village church cordially invites all students to attend its services and, if possible, to join its membership. Every effort is made by the college to minister to the higher life of the students and to bring before them the noblest ideals, without in any way attempting to coerce them to particular beliefs.

## The College Lecture Association.

Faculty and students, uniting with residents of the vicinity, conduct a winter lecture course, the aim of which is to introduce talented speakers upon subjects both entertaining and instructive. The association may be looked upon as a permanent and important factor in college activities. For the season of 1908-1909 the following program was secured:

- Dec. 18. Hon. Arthur K. Peck, *THE STORM HEROES OF OUR COAST.* (Illustrated).  
 Jan. 8. Mr. Phidelah Rice, in *DAVID GARRICK.*  
 Feb. 15. Dr. D. F. Fox, *A NEGLECTED CAVALIER.*  
 Mar. 20. Germain, the Wizard.  
 April 2. The Dodge Trio and Miss Helen Westgate. Violin, 'Cello, Piano, and Voice.

## The Kingston Prize.

For some years the sum of sixty dollars has been offered annually by a friend of the college to encourage literary work among the students. The contest in 1908 took the form of a debate upon the proposition, "*Resolved, That our present navy is sufficiently large.*" R. H. Carpenter, '10, and H. R. Tisdale, '09, maintained the affirmative; while O. M. Drummond, '12, and C. B. Edwards, '10, contended for the negative. The first prize of \$25.00 was awarded to Mr. Carpenter as the best individual speaker; the second of \$15.00, to Mr. Drummond. Since the judges declared the debate a tie, \$20.00, which was to have been awarded to the winning side, was divided equally among the four speakers.

## The Library.

The library occupies a large room in Lippitt Hall, and numbers over seventeen thousand volumes. The books are arranged in stacks, to which the students have free access. The Dewey system of classification is used; and a dictionary catalogue gives author, subject and title. As the library has been from the first intended for reference work, the various departments of instruction have made their selections with the greatest care. Combined with the library is the reading-room, where one hundred and twenty of the leading

periodicals—of literary, scientific, and general interest—are on file. From time to time these are bound, and prove of great value in reference work.

Since the library has been a government depository sixteen hundred books and pamphlets have been received, which are of value in scientific investigation and research.

The library is open every week day from 7:30 A. M. to 6:00 P. M., with the exception of an hour at noon. The librarian or her representative is in constant attendance to aid any one in search of information. As the college is an institution designed to further the educational interests of Rhode Island, all residents of the state are at liberty to use its library.

### Location.

The college campus is one and a half miles from Kingston station, which is at the junction of the main line of the N. Y., N. H. & H. R. R. with the Narragansett Pier branch, thus insuring excellent railroad accommodations. The buildings are on a hill which commands an extended view of the surrounding country—a location both healthful and beautiful. Sixteen trains stop daily at the station, so that the college is accessible from Providence or from New York city at almost any hour in the day. The ride from Providence is about forty to forty-five minutes in length. From New York the time is some four hours.



<i>Agriculture.</i>			<i>Engineering.</i>			<i>Teachers' Course in Applied Science.</i>			<i>Home Economics.</i>		
First Term.	Second Term.		First Term.	Second Term.		First Term.	Second Term.		First Term.	Second Term.	
Subjects.	Credits.		Subjects.	Credits.		Subjects.	Credits.		Subjects.	Credits.	
Engl. II, Newspaper Work (66).....	1		Engl. II, Newspaper Work (66).....	1		Engl. II, Newspaper Work (66).....	1		Engl. II, Newspaper Work (66).....	1	
Engl. III, Argumentation (66).....	1		Engl. III, Argumentation (66).....	1		Engl. III, Argumentation (66).....	1		Engl. III, Argumentation (66).....	1	
Oral Exp. II, Dramatic (66).....	1		Oral Exp. II, Dramatic (66).....	1		Oral Exp. II, Dramatic (66).....	1		Oral Exp. II, Dramatic (66).....	1	
Mod. Lang., Ger. II, Intermediate, (67).....	3		Mod. Lang., Ger. II, Intermediate, (67).....	4		Mod. Lang., Ger. II, Intermediate, (67).....	3		Mod. Lang., Ger. II, Intermediate, (67).....	3	
Chem. III, Qual. Anal. (48).....	3		Chem. III, Qual. Anal. (48).....	1½		Chem. III, Qual. Anal. (48).....	3		Chem. III, Qual. Anal. (48).....	3	
Chem. IV, Organic (48).....	3		Chem. IV, Organic (48).....	5		Chem. IV, Organic (48).....	3		Chem. IV, Organic (48).....	3	
Phys. I, Descriptive (71).....	1		M. Eng. IV, Element. Mechanics (57).....	5		Phys. II, General (71).....	4		Chem. IV, Organic (48).....	3	
Bot. II, Economic (46).....	1		M. Eng. V, Des. Geom. (57).....	3		Phys. III, Laboratory (71).....	1½		Zoöl. I, General (73).....	1	
Zoöl. I, General (73).....	1		Mil. S. and T. I, Drill (69).....	3		Bot. II, Economic (46).....	1		Zoöl. III, Physiology (73).....	1	
Zoöl. III, Physiology (73).....	2		Options: A, B, C, D.			Zoöl. I, General (73).....	1		Fr. Drawing III, Hist. of Art (51).....	1	
Agr. II, Forage Crops (40).....	2		One of these must be chosen.			Zoöl. II, General (73).....	1		Fr. Drawing IV, Color Problems (51).....	1	
Hort. II, Veg. Gard. (44).....	2		A. Mechanical Engineering: VI. Mech. Drawing (57).....	1		Zoöl. IX, Methods in Nat. Study (73).....	1		Physical Training.....	1	
Hort. IV, Spray. and Prun. (44).....	1		VII. Machine Shop (57).....	1		Mil. S. and T. I, Drill (69).....	1		Home Economics.....	1	
Civ. Eng. I, Surveying (62).....	1		VIII. Pattern Making (58).....	1		Physical Training.....	1		IV. Uses of Food (52).....	1	
Mil. S. and T. I, Drill (69).....	1		Civ. Eng. I, Surveying (62).....	2					V. Personal Hygiene (52).....	2	
			B. Electrical Engineering: M. Eng. VI, Mech. Drawing (57).....	2					VI. Home Decoration (52).....	2	
			M. Eng. VII, Machine Shop (57).....	3					VII. Dietetics (53).....	2	
			Civ. Eng. I, Surveying (62).....	1							
			C. Civil Engineering: I, Surveying (62).....	1							
			II, Topograph. Survey. (63).....	2							
			M. Eng. VI, Mech. Drawing (57).....	2							
			M. Eng. VII, Machine Shop (57).....	3							
			D. Chemical Engineering: Chem. IV, Organic (48).....	3							
			Mod. Lang., Ger. II, Intermediate, (67).....	3							



## Junior Year.

Agriculture.			Engineering.			Teachers' Course in Applied Science.			Home Economics.		
First Term.	Second Term.	Credits.	First Term.	Second Term.	Credits.	First Term.	Second Term.	Credits.	First Term.	Second Term.	Credits.
Subjects.			Subjects.			Subjects.			Subjects.		
Engl. IV, Mod. Engl. Prose (66).....2	1	1	Engl. IV, Mod. Engl. Prose (66).....2	1	1	Engl. IV, Mod. Engl. Prose (66).....2	1	1	Engl. IV, Mod. Engl. Prose (66).....2	1	1
Oral Exp. III, Debating (66).....1	1	1	Oral Exp. III, Debating (66).....1	1	1	Oral Exp. III, Debating (66).....1	1	1	Oral Exp. III, Debating (66).....1	1	1
Hist. I, Industrial (65).....2	3	3	Hist. I, Industrial (65).....2	3	3	Hist. I, Industrial (65).....2	3	3	Hist. I, Industrial (65).....2	3	3
Mil. S. and T. I. Drill (69).....[1]	2	2	Mil. S. and T. I. Drill (69).....[1]	2	2	Psychology I, (72).....3	1	1	Psychology I, (72).....3	1	1
Bot. IV, Forestry (46).....3	3	3	Options: A, B, C, D.....[1]	3	3	Physical Training.....[1]	5	5	Physical Education.....3	2	2
Chem. XIV, Agricultural (49).....3	3	3	One of these must be chosen.	3	3	Physical Training.....[1]	5	5	Chem. XIX, Physiological (49).....2	2	2
Zool. IV, Ec. Entomol. (73).....3	3	3	A. Mechanical Engineering:	3	3	Elective.....[1]	5	5	Zool. VII, Vertebrate Anat. (73).....1	1	1
Agr. III, Soils and Fert. (40).....3	3	3	IX, Steam Eng. (58).....3	3	3	Subjects not selected for the option to be chosen.	5	5	Zool. VIII, Histol. and Embry. (73).....2	2	2
Agr. IV, Farm Crops (40).....3	3	3	XII, Mechanism (58).....3	3	3	Options: A, B, C.	5	5	Home Economics:	1	1
Agr. VII, Farm Man. (41).....3	3	3	XIII, Valve Gears and Dy. (58).....3	3	3	One of these must be chosen.	5	5	VIII, Food Supplies, etc. (53).....2	2	2
Ag. Hus. VII, Dairy Prac. (42).....1	2	2	XIV, Mach. Shop (58).....3	3	3	A. Chemistry:	3	3	IX, Public Hygiene (53).....1	1	1
Hort. III, Fruit Culture (44).....2	2	2	XV, XVI, Exp. Eng. a. b. (59) [2]	3	3	V, Organic Lab. (48).....[3]	4	4	X, Textiles (53).....2	2	2
M. Eng. II, Forge and Foundry (57).....[1]	5	5	B. Electrical Engineering:	3	3	VIII, Quant. Anal. (49) [3]	1	1	XI, Child Hygiene (53).....Options: A, B, C.	1	1
M. Eng. VII, Mach. Shop (57).....5	5	5	I, II, Direct Cur. (61).....3	3	3	XI, Mineralogy (49).....1	10	10	One of these must be chosen.	3	3
Elective.....			IX, Elect. Illum. (61).....1	1	1	XXI, Reports and Dis. (49).....7	7	7	A. Teachers' Option:	3	3
			Phys. IV, El. Meas. (71).....1	1	1	B. Biology.....[7]	7	7	Education I, History (54).....3	3	3
			Phys. V, El. Meas. (71).....1	1	1	[Botany (45) and Zool. (72)]	7	7	Education II, Principles (54).....2	2	2
			M. Eng. IX, Steam Eng. (58).....3	3	3	C. Agriculture (39).....7	7	7	Home Ec. XV, History (53).....2	2	2
			M. Eng. X, XI, Ap. M., Hydr. (58).....5	5	5				Home Ec. XV, History (53).....2	2	2
			M. Eng. XV, XVI, Exp. Eng. a. b. (59).....[2]	2	2				Agr. VII, Farm Man. (41).....2	2	2
			C. Civil Engineering:	2	2				Ag. Hus. VII, Dairy Prac. (42).....1	1	1
			III, Railroad Eng. (63).....4	4	4				Hort. II, Veg. Gard. (44).....2	2	2
			IV, Graphic Statics (63).....2	2	2				C. Elective.....3	3	3
			V, Roads and Pave. (63).....3	3	3						
			M. Eng. IX, Steam Eng. (58).....3	3	3						
			M. Eng. X, XI, Ap. Mech., Hydr. (58).....5	5	5						
			M. Eng. XV, XVI, Exp. Eng. a. b. (59).....[2]	2	2						
			Geology I, (65).....2	2	2						
			D. Chemical Engineering:	2	2						
			Chem. V, VI, Organic. (48).....3	3	3						
			Chem. VII, Quant. Anal. (49).....[3]	3	3						
			Chem. XI, Det. Min. (49).....1	1	1						
			Chem. XXI, Reports Dis. (49).....1	1	1						
			M. Eng. IX, Steam Eng. (58).....3	3	3						
			M. Eng. X, Ap. Mech., Hydr. (58).....5	5	5						
			M. Eng. XV, XVI, Exp. Eng. a. b. (59).....[2]	2	2						
			Geology I, (65).....2	2	2						
			D. Chemical Engineering:	2	2						
			Chem. V, VI, Organic. (48).....3	3	3						
			Chem. VII, Quant. Anal. (49).....[3]	3	3						
			Chem. XI, Det. Min. (49).....1	1	1						
			Chem. XXI, Reports Dis. (49).....1	1	1						
			M. Eng. IX, Steam Eng. (58).....3	3	3						
			M. Eng. X, Ap. Mech., Hydr. (58).....5	5	5						
			M. Eng. XV, XVI, Exp. Eng. a. b. (59).....[2]	2	2						
			Geology I, (65).....2	2	2						
			D. Chemical Engineering:	2	2						
			Chem. V, VI, Organic. (48).....3	3	3						
			Chem. VII, Quant. Anal. (49).....[3]	3	3						
			Chem. XI, Det. Min. (49).....1	1	1						
			Chem. XXI, Reports Dis. (49).....1	1	1						
			M. Eng. IX, Steam Eng. (58).....3	3	3						
			M. Eng. X, Ap. Mech., Hydr. (58).....5	5	5						
			M. Eng. XV, XVI, Exp. Eng. a. b. (59).....[2]	2	2						
			Geology I, (65).....2	2	2						
			D. Chemical Engineering:	2	2						
			Chem. V, VI, Organic. (48).....3	3	3						
			Chem. VII, Quant. Anal. (49).....[3]	3	3						
			Chem. XI, Det. Min. (49).....1	1	1						
			Chem. XXI, Reports Dis. (49).....1	1	1						
			M. Eng. IX, Steam Eng. (58).....3	3	3						
			M. Eng. X, Ap. Mech., Hydr. (58).....5	5	5						
			M. Eng. XV, XVI, Exp. Eng. a. b. (59).....[2]	2	2						
			Geology I, (65).....2	2	2						
			D. Chemical Engineering:	2	2						
			Chem. V, VI, Organic. (48).....3	3	3						
			Chem. VII, Quant. Anal. (49).....[3]	3	3						
			Chem. XI, Det. Min. (49).....1	1	1						
			Chem. XXI, Reports Dis. (49).....1	1	1						
			M. Eng. IX, Steam Eng. (58).....3	3	3						
			M. Eng. X, Ap. Mech., Hydr. (58).....5	5	5						
			M. Eng. XV, XVI, Exp. Eng. a. b. (59).....[2]	2	2						
			Geology I, (65).....2	2	2						
			D. Chemical Engineering:	2	2						
			Chem. V, VI, Organic. (48).....3	3	3						
			Chem. VII, Quant. Anal. (49).....[3]	3	3						
			Chem. XI, Det. Min. (49).....1	1	1						
			Chem. XXI, Reports Dis. (49).....1	1	1						
			M. Eng. IX, Steam Eng. (58).....3	3	3						
			M. Eng. X, Ap. Mech., Hydr. (58).....5	5	5						
			M. Eng. XV, XVI, Exp. Eng. a. b. (59).....[2]	2	2						
			Geology I, (65).....2	2	2						
			D. Chemical Engineering:	2	2						
			Chem. V, VI, Organic. (48).....3	3	3						
			Chem. VII, Quant. Anal. (49).....[3]	3	3						
			Chem. XI, Det. Min. (49).....1	1	1						
			Chem. XXI, Reports Dis. (49).....1	1	1						
			M. Eng. IX, Steam Eng. (58).....3	3	3						
			M. Eng. X, Ap. Mech., Hydr. (58).....5	5	5						
			M. Eng. XV, XVI, Exp. Eng. a. b. (59).....[2]	2	2						
			Geology I, (65).....2	2	2						
			D. Chemical Engineering:	2	2						
			Chem. V, VI, Organic. (48).....3	3	3						
			Chem. VII, Quant. Anal. (49).....[3]	3	3						
			Chem. XI, Det. Min. (49).....1	1	1						
			Chem. XXI, Reports Dis. (49).....1	1	1						
			M. Eng. IX, Steam Eng. (58).....3	3	3						
			M. Eng. X, Ap. Mech., Hydr. (58).....5	5	5						
			M. Eng. XV, XVI, Exp. Eng. a. b. (59).....[2]	2	2						
			Geology I, (65).....2	2	2						
			D. Chemical Engineering:	2	2						
			Chem. V, VI, Organic. (48).....3	3	3						
			Chem. VII, Quant. Anal. (49).....[3]	3	3						
			Chem. XI, Det. Min. (49).....1	1	1						
			Chem. XXI, Reports Dis. (49).....1	1	1						
			M. Eng. IX, Steam Eng. (58).....3	3	3						
			M. Eng. X, Ap. Mech., Hydr. (58).....5	5	5						
			M. Eng. XV, XVI, Exp. Eng. a. b. (59).....[2]	2	2						
			Geology I, (65).....2	2	2						
			D. Chemical Engineering:	2	2						
			Chem. V, VI, Organic. (48).....3	3	3						
			Chem. VII, Quant. Anal. (49).....[3]	3	3						
			Chem. XI, Det. Min. (49).....1	1	1						
			Chem. XXI, Reports Dis. (49).....1	1	1						
			M. Eng. IX, Steam Eng. (58).....3	3	3						
			M. Eng. X, Ap. Mech., Hydr. (58).....5	5	5						
			M. Eng. XV, XVI, Exp. Eng. a. b. (59).....[2]	2	2						
			Geology I, (65).....2	2	2						
			D. Chemical Engineering:	2	2						
			Chem. V, VI, Organic. (48).....3	3	3						
			Chem. VII, Quant. Anal. (49).....[3]	3	3						
			Chem. XI, Det. Min. (49).....1	1	1						
			Chem. XXI, Reports Dis. (49).....1	1	1						
			M. Eng. IX, Steam Eng. (58).....3	3	3						
			M. Eng. X, Ap. Mech., Hydr. (58).....5	5	5						
			M. Eng. XV, XVI, Exp. Eng. a. b. (59).....[2]	2	2						
			Geology I, (65).....2	2	2						
			D. Chemical Engineering:	2	2						
			Chem. V, VI, Organic. (48).....3	3	3						
			Chem. VII, Quant. Anal. (49).....[3]	3	3						
			Chem. XI, Det. Min. (49).....1	1	1						
			Chem. XXI, Reports Dis. (49).....1	1	1						
			M. Eng. IX, Steam Eng. (58).....3	3	3						
			M. Eng. X, Ap. Mech., Hydr. (58).....5	5	5						
			M. Eng. XV, XVI, Exp. Eng. a. b. (59).....[2]	2	2						
			Geology I, (65).....2	2	2						
			D. Chemical Engineering:	2	2						
			Chem. V, VI, Organic. (48).....3	3	3						
			Chem. VII, Quant. Anal. (49).....[3]	3	3						
			Chem. XI, Det. Min. (49).....1	1	1						
			Chem. XXI, Reports Dis. (49).....1	1	1						
			M. Eng. IX, Steam Eng. (58).....3	3	3						
			M. Eng. X, Ap. Mech., Hydr. (58).....5	5	5						
			M. Eng. XV, XVI, Exp. Eng. a. b. (59).....[2]	2	2						
			Geology I, (65).....2	2	2						
			D. Chemical Engineering:	2	2						
			Chem. V, VI, Organic. (48).....3	3	3						
			Chem. VII, Quant. Anal. (49).....[3]	3	3						
			Chem. XI, Det. Min. (49).....1	1	1						
			Chem. XXI, Reports Dis. (49).....1	1	1						
			M. Eng. IX, Steam Eng. (58).....3	3	3						
			M. Eng. X, Ap. Mech., Hydr. (58).....5	5	5						
			M. Eng. XV, XVI, Exp. Eng. a. b. (59).....[2]	2	2						

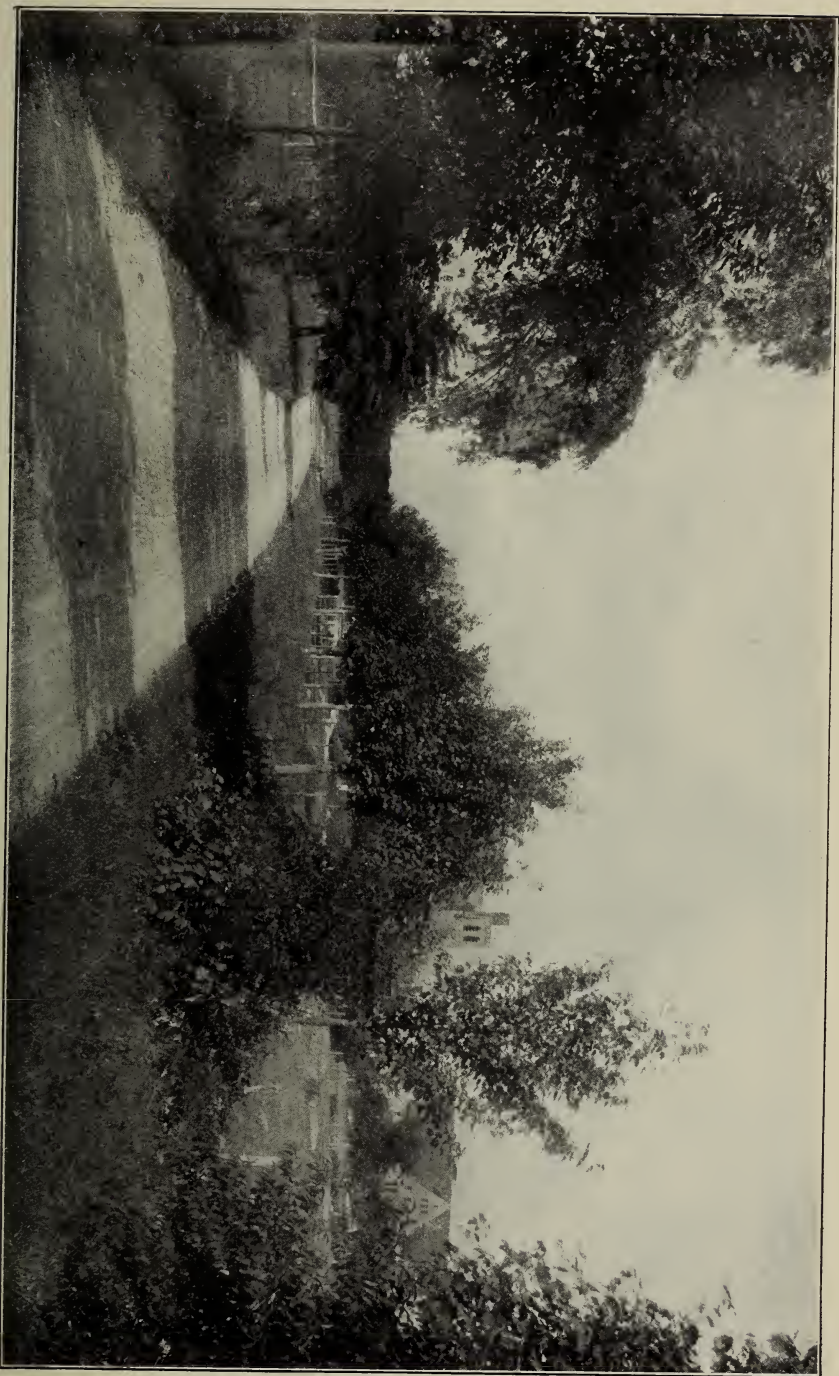
Agriculture.		Engineering.		Teachers' Course in Applied Science.		Home Economics.	
First Term.	Second Term.	First Term.	Second Term.	First Term.	Second Term.	First Term.	Second Term.
Subjects.	Credits.	Subjects.	Credits.	Subjects.	Credits.	Subjects.	Credits.
{ Economics I, Pol. Econ. (51).....	5	{ Economics I, Pol. Econ. (51).....	5	{ Economics I, Pol. Econ. (51).....	5	{ Economics I, Pol. Econ. (51).....	5
{ History II, Civ. Gov't (65).....	3	{ History II, Civ. Gov't (65).....	3	{ History II, Civ. Gov't (65).....	3	{ History II, Civ. Gov't (65).....	3
{ Engl. V, Mod. Engl. Poetry (66).....	[1]	{ Engl. V, Mod. Engl. Poetry (66).....	[1]	{ Engl. V, Mod. Engl. Poetry (66).....	[1]	{ Engl. V, Mod. Engl. Poetry (66).....	[1]
Thesis.....	5	Thesis.....	5	Thesis.....	5	Thesis.....	5
Oral Exp. IV, Oratory (66).....	3	Oral Exp. IV, Oratory (66).....	3	Oral Exp. IV, Oratory (66).....	3	Oral Exp. IV, Oratory (66).....	3
Options: A, B, C, D.....	[1]	Options: A, B, C, D.....	[1]	Options: A, B, C, D.....	[1]	Options: A, B, C, D.....	[1]
One of these must be chosen.		One of these must be chosen.		One of these must be chosen.		One of these must be chosen.	
A. Mechanical Engineering:.....		A. Mechanical Engineering:.....		A. Mechanical Engineering:.....		A. Mechanical Engineering:.....	
XVII, XVIII, Exp. Eng. c, d.....	[2]	XVII, XVIII, Exp. Eng. c, d.....	[2]	XVII, XVIII, Exp. Eng. c, d.....	[2]	XVII, XVIII, Exp. Eng. c, d.....	[2]
XIX, Heat, and Vent. (59).....	2	XIX, Heat, and Vent. (59).....	2	XIX, Heat, and Vent. (59).....	2	XIX, Heat, and Vent. (59).....	2
XX, Machine Design (59).....	[3]	XX, Machine Design (59).....	[3]	XX, Machine Design (59).....	[3]	XX, Machine Design (59).....	[3]
XXI, Power Pl. and Des. (60).....	[3]	XXI, Power Pl. and Des. (60).....	[3]	XXI, Power Pl. and Des. (60).....	[3]	XXI, Power Pl. and Des. (60).....	[3]
Phys. V, Theory El. Meas. (71).....	1½	Phys. V, Theory El. Meas. (71).....	1½	Phys. V, Theory El. Meas. (71).....	1½	Phys. V, Theory El. Meas. (71).....	1½
Phys. VI, Photo. Meas. (71).....	[1½]	Phys. VI, Photo. Meas. (71).....	[1½]	Phys. VI, Photo. Meas. (71).....	[1½]	Phys. VI, Photo. Meas. (71).....	[1½]
E. Eng. I, II, Dir. Cur. (61).....	3	E. Eng. I, II, Dir. Cur. (61).....	3	E. Eng. I, II, Dir. Cur. (61).....	3	E. Eng. I, II, Dir. Cur. (61).....	3
E. Eng. IX, The. Alt. Cur. (61).....	1½	E. Eng. IX, The. Alt. Cur. (61).....	1½	E. Eng. IX, The. Alt. Cur. (61).....	1½	E. Eng. IX, The. Alt. Cur. (61).....	1½
E. Eng. X, El. Illum. (61).....	1½	E. Eng. X, El. Illum. (61).....	1½	E. Eng. X, El. Illum. (61).....	1½	E. Eng. X, El. Illum. (61).....	1½
B. Electrical Engineering:.....		B. Electrical Engineering:.....		B. Electrical Engineering:.....		B. Electrical Engineering:.....	
V, The. Alt. Cur. (61).....	3	V, The. Alt. Cur. (61).....	3	V, The. Alt. Cur. (61).....	3	V, The. Alt. Cur. (61).....	3
{ VI, Alt. Cur. Meas. (61).....	[3]	{ VI, Alt. Cur. Meas. (61).....	[3]	{ VI, Alt. Cur. Meas. (61).....	[3]	{ VI, Alt. Cur. Meas. (61).....	[3]
{ Phys. VII, El. Meas. (71).....	[3]	{ Phys. VII, El. Meas. (71).....	[3]	{ Phys. VII, El. Meas. (71).....	[3]	{ Phys. VII, El. Meas. (71).....	[3]
VIII, Des. El. Machin. (61).....	1	VIII, Des. El. Machin. (61).....	1	VIII, Des. El. Machin. (61).....	1	VIII, Des. El. Machin. (61).....	1
X, Telephone Eng. (61).....	2	X, Telephone Eng. (61).....	2	X, Telephone Eng. (61).....	2	X, Telephone Eng. (61).....	2
XI, Transmiss. Energy (61).....	2	XI, Transmiss. Energy (61).....	2	XI, Transmiss. Energy (61).....	2	XI, Transmiss. Energy (61).....	2
M. Eng. XVII, Exp. Eng. c, (59).....	2	M. Eng. XVII, Exp. Eng. c, (59).....	2	M. Eng. XVII, Exp. Eng. c, (59).....	2	M. Eng. XVII, Exp. Eng. c, (59).....	2
C. Civil Engineering:.....		C. Civil Engineering:.....		C. Civil Engineering:.....		C. Civil Engineering:.....	
VII, Bridge Details (63).....	[1]	VII, Bridge Details (63).....	[1]	VII, Bridge Details (63).....	[1]	VII, Bridge Details (63).....	[1]
VIII, VIII, Bridge Anal., Design (63).....	2	VIII, VIII, Bridge Anal., Design (63).....	2	VIII, VIII, Bridge Anal., Design (63).....	2	VIII, VIII, Bridge Anal., Design (63).....	2
IX, Masonry Const. (63).....	[3]	IX, Masonry Const. (63).....	[3]	IX, Masonry Const. (63).....	[3]	IX, Masonry Const. (63).....	[3]
X, Rein. Concrete (64).....	2	X, Rein. Concrete (64).....	2	X, Rein. Concrete (64).....	2	X, Rein. Concrete (64).....	2
XI, Sewerage (64).....	2	XI, Sewerage (64).....	2	XI, Sewerage (64).....	2	XI, Sewerage (64).....	2
XII, Water Supply (64).....	3	XII, Water Supply (64).....	3	XII, Water Supply (64).....	3	XII, Water Supply (64).....	3
XIII, Tunneling (64).....	1	XIII, Tunneling (64).....	1	XIII, Tunneling (64).....	1	XIII, Tunneling (64).....	1
XIV, Contracts, Spec. (64).....	2	XIV, Contracts, Spec. (64).....	2	XIV, Contracts, Spec. (64).....	2	XIV, Contracts, Spec. (64).....	2
M. Eng. XVII, Exp. Eng. c, (59).....	2	M. Eng. XVII, Exp. Eng. c, (59).....	2	M. Eng. XVII, Exp. Eng. c, (59).....	2	M. Eng. XVII, Exp. Eng. c, (59).....	2
M. Eng. XVIII, Exp. Eng. d, (59).....	[2]	M. Eng. XVIII, Exp. Eng. d, (59).....	[2]	M. Eng. XVIII, Exp. Eng. d, (59).....	[2]	M. Eng. XVIII, Exp. Eng. d, (59).....	[2]
D. Chemical Engineering:.....		D. Chemical Engineering:.....		D. Chemical Engineering:.....		D. Chemical Engineering:.....	
Chem. V, Organic (Adv.) (48).....	3	Chem. V, Organic (Adv.) (48).....	3	Chem. V, Organic (Adv.) (48).....	3	Chem. V, Organic (Adv.) (48).....	3
Chem. XI, Determ. Min. (49).....	[1½]	Chem. XI, Determ. Min. (49).....	[1½]	Chem. XI, Determ. Min. (49).....	[1½]	Chem. XI, Determ. Min. (49).....	[1½]
Chem. XII, Metall. (49).....	2	Chem. XII, Metall. (49).....	2	Chem. XII, Metall. (49).....	2	Chem. XII, Metall. (49).....	2
Chem. XVII, XVII, Indus. (49).....	4	Chem. XVII, XVII, Indus. (49).....	4	Chem. XVII, XVII, Indus. (49).....	4	Chem. XVII, XVII, Indus. (49).....	4
Chem. XVIII, Assaying (49).....	[2]	Chem. XVIII, Assaying (49).....	[2]	Chem. XVIII, Assaying (49).....	[2]	Chem. XVIII, Assaying (49).....	[2]
Chem. XXI, Reports, Dis. (49).....	3	Chem. XXI, Reports, Dis. (49).....	3	Chem. XXI, Reports, Dis. (49).....	3	Chem. XXI, Reports, Dis. (49).....	3
M. Eng. XII, Mechanism (58).....	3	M. Eng. XII, Mechanism (58).....	3	M. Eng. XII, Mechanism (58).....	3	M. Eng. XII, Mechanism (58).....	3

### Courses of Study Leading to a Certificate.

The only scholarship requirement for admission to the Short Courses in Agriculture, Mechanic Arts, and Domestic Science is a common-school education. The age for admission to all four courses must be at least sixteen years. The courses lead to a certificate.

<i>Short Course in Agriculture.</i> FIRST YEAR.			<i>Short Course in Mechanic Arts.</i> FIRST YEAR.			<i>Short Course in Domestic Science.</i> FIRST YEAR.		
First Term.			First Term.			First Term.		
Subjects.	Credits.	Second Term.	Subjects.	Credits.	Second Term.	Subjects.	Credits.	Second Term.
Engl. A. Elementary (66).....	5		Engl. A. Elementary (66).....	5		Engl. A. Elementary (66).....	5	
Math. C. D. Arithmetic, Algebra (68).....	5		Math. C. D. Arithmetic, Algebra (68).....	5		Math. C. D. Arithmetic, Algebra (68).....	5	
Bot. A. Plant Life (46).....	1 [2]		M. Eng. I. Mech. Drawing (57).....	[3]		Bot. A. Plant Life (46).....	1 [2]	
Zool. A. Elementary (73).....	2 [2½]		M. Eng. II. Forge and Foundry (57).....	[3]		Zool. A. Elementary (73).....	2 [2½]	
Agr. A. Soils, Fertilizers (41).....	3 [1]		M. Eng. III. Pattern Making (57).....	[3]		Dom. Sci. A. Household Technique (54).....	1 [2½]	
Hort. A. Vegetable Gardening (45).....	3		M. Eng. VII. Machine Shop (57).....	[3]		Dom. Sci. B. Care of House (54).....	2 [1]	
An. Hus. A. Breeds and Care (43).....	2		M. Eng. D. Mechanism (60).....	3		Dom. Sci. C. American Home (54).....	2	
An. Hus. B. Stock Judging (43).....	[2]		Mil. S. T. I. Drill (69).....	[1]		Physical Training.....	[1]	
Woodwork I. Bench and Lathe (72).....	[1½]							
Woodwork II. Farm Buildings (72).....	[1]							
Mil. S. T. I. Drill (69).....	[1]							
SECOND YEAR.			SECOND YEAR.			SECOND YEAR.		
Second Term.			Second Term.			Second Term.		
Engl. B. Elementary (66).....	3		Engl. B. Elementary (66).....	3		Engl. B. Elementary (66).....	3	
Math. F. Geometry, Trigonometry (68).....	4		Math. F. Geometry, Trigonometry (68).....	4		Math. F. Geometry, Trigonometry (68).....	4	
Chem. A. Plant and Animal (50).....	3 [1]		M. Eng. V. Descriptive Geometry (57).....	3		Chem. A. Plant and Animal (50).....	3 [1]	
Agr. B. Crops and Rotations (41).....	3		M. Eng. VI. Mech. Drawing (57).....	[2]		Dom. Sci. D. Foods (54).....	[2]	
An. Hus. C. Management and Accounts (41).....	3		M. Eng. XIV. Machine Shop (58).....	[3]		Dom. Sci. E. Management of House (54).....	3	
An. Hus. D. Stock Feeding (43).....	[1]		M. Eng. E. Engineering Theory (60).....	5		Dom. Sci. F. Hygiene (54).....	2	
An. Hus. C. Breeding (43).....	[1]		Physics A. Elementary (72).....	3 [1]		Physical Training.....	[1]	
An. Hus. F. Poultry (43).....	[1]		Mil. S. T. I. Drill (69).....	[1]				
Hort. B. Fruit Culture (45).....	2							
Aggr. D. Farm Machines (41).....	[2]							
M. Eng. J. Forging, Machine Shop (60).....	[2]							
Mil. S. T. I. Drill (69).....	[1]							





AN APPROACH TO THE COLLEGE.





## Departments of Instruction.

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The following subjects are offered in the different departments. All subjects in the departments of instruction preceded by a Roman numeral count towards the degree of B. S. All subjects preceded by a capital letter lead to a certificate.

### Agriculture.

PROFESSOR ADAMS, MR. BURDICK, MR. MALLETTE, MR. LAMBERT.

The instruction given in this subject is grouped under the three heads—agronomy, animal husbandry, and horticulture. The aim is to give such theoretical and practical training in the fundamentals of agriculture as will enable those who take this work to fill positions of trust and responsibility, either as owners of their own farms, managers of estates, or along other lines of agricultural activity.

That the graduates from this department may be fitted to take up the work as outlined above, all students registering for a degree in agriculture will be required to show a certain familiarity with the ordinary operations of the farm before such degree is given. In order that those students who come from the cities and towns, and are not familiar with the practical operations of the farms, may receive training in this work, opportunity for such instruction will be offered by the different departments during the college year. No college credits will be given for such work. As a rule, however, it will be much better for the students to spend one or two summers upon farms in order to get this training than to attempt to obtain the proficiency necessary by working only at the college during the college year. Persons taking practical work upon farms during the summer vacations will be required to furnish a certificate from their employers stating the time spent on the farm and the kind

and amount of work accomplished. Special attention must be given to that branch of agriculture which the student is electing in the regular course.

### AGRONOMY.

The instruction in agronomy begins the first term of the Sophomore year, when a study is made of the forage plants. Following this work are subjects dealing with the other field crops and their uses as food for man and beast.

The business side of farm life is given attention in the subjects treating of farm equipment and management. Work with farm machinery is a laboratory course, in which the students are taught how to care for, repair, and operate modern farm machinery. In the Senior year there is instruction in plant breeding, a subject which is of the utmost importance to one who would make the most of the opportunities in crop production. Instruction in agricultural experimentation deals largely with the application of the results which have been obtained by the experiment stations, to the practical problems of the farm.

The equipment of the department includes the college farm and barns; also the farm machinery, consisting of a good line of tillage implements, fertilizer distributors, grain drill, and harvesting machinery. A well-equipped blacksmith shop is also provided.

Students have the advantage of the field experiments which are being conducted by the experiment station upon fertilizer problems and with various rotations.

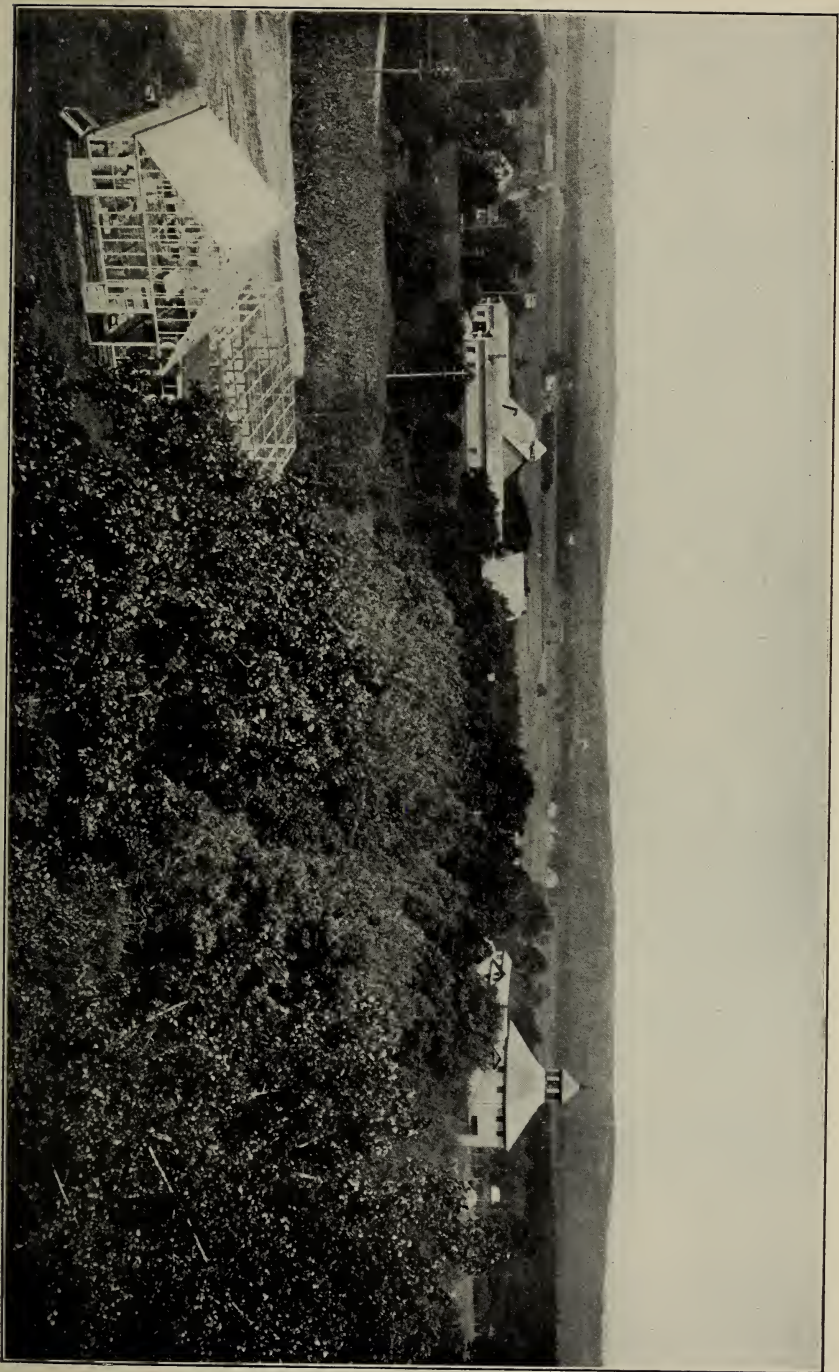
### Subjects.

II. Forage Crops.—History and development of the plants used for forage; silage, methods of construction of silos. *Two recitation credits per week, second term. Required of Sophomores in Agriculture.*

III. Soils and Fertilizers.—Origin and constituents of soils; texture, moisture, drainage, methods of tillage. Farm manures, artificial manures, composition and use; formulas for various crops. *Three recitation and one laboratory credits per week, first term. Required of Juniors in Agriculture.*

IV. Farm Crops.—Origin and history; production and place in the rotation of clovers, grasses, and root crops. *Three recitation and one laboratory credits per week, second term. Required of Juniors in Agriculture.*

V. Farm Equipment.—Selection and equipment of farms, buildings, fences, roads, water supply, farm power, machinery. *Two recitation credits per week, second term. Option for Juniors in Agriculture.*



A VIEW TOWARD THE NORTHWEST.



VI. Farm Machinery.—Development of farm machinery, methods of construction, function, and operation. *Two recitation and one laboratory credits per week, second term. Option for Juniors in Agriculture.*

VII. Farm Management.—Discussion of agricultural methods, choice of a farm, capital, marketing, types of farming, accounts. *Two recitation credits per week, second term. Required of Juniors in Agriculture.*

VIII. Farm Management (advanced).—Individual problems of farm management are assigned. Abandoned farms will be visited and a critical study made of the existing conditions. *Two recitation credits per week, first term. Option for Seniors in Agriculture.*

IX. Literature.—History of agricultural and horticultural literature; a study of the different types of agricultural literature as illustrated by ancient and modern authors. Reports upon special topics. *Two recitation credits per week, second term. Option for Seniors in Agriculture.*

X. Agricultural Experimentation.—Objects, methods, and results of agricultural experimentation. A study of federal and state aid to agriculture as shown in the work of the United States Department of Agriculture and the Experiment Stations. *Three recitation credits per week, first term. Required of Seniors in Agriculture.*

XI. Plant Breeding.—A discussion of the development of plants under cultivation; with reference to heredity, environment, variation, and selection. *Five recitation credits per week, second term. Required of Seniors in Agriculture.*

XII. Thesis.—*Required of Seniors in Agriculture.*

A. Soils and Fertilizers.—An elementary course upon the origin and nature of soils. Fertilizers; natural and artificial manures; preparation and use; fertilizer arithmetic. *Three recitation and one laboratory credits per week, second term. Required of Short-Course students in Agriculture, first year.*

B. Crops and Rotations.—Methods of culture and uses of the grasses, clovers, cereals, and root crops. Rotation for the various types of farms. *Three recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.*

C. Farm Management and Accounts.—An elementary course upon the principles of farm management, equipment, and farm bookkeeping. *Three recitation credits per week, second term. Required of Short-Course students in Agriculture, second year.*

D. Farm Machinery.—Care and repair of farm implements. *Two laboratory credits for twelve weeks. Required of Short-Course students in Agriculture, second year.*

## ANIMAL HUSBANDRY.

Instruction in animal husbandry is so arranged as to furnish practical as well as theoretical training in the selection, care, and



management of the live stock on the farm. Instruction commences with a brief study of breeds, and care of poultry in the first term of the Freshman year. This course, together with the judging of stock in the second term, aims to provide a large amount of practical work in combination with the theoretical. In the Junior year, attention is directed to dairying, and the breeding and feeding of animals; and in the Senior year the work includes judging, care of animals, and veterinary practice. In veterinary practice the student is taught to diagnose and prescribe for the common ailments of farm animals.

The equipment is particularly strong on the poultry side. The college poultry plant enables one to obtain a large amount of practical experience in incubation, brooding, and management. In addition to the poultry in the college yards, the students have opportunity to follow the investigations with turkeys which are now being conducted by the experiment station.

In addition to the subjects mentioned below, there is a short course in poultry keeping during the winter months, full information concerning which may be obtained by addressing the president of the college.

### Subjects.

I. Stock Judging.—Scoring and comparison judging of the various types of horses, cattle, sheep, and swine. *Two laboratory credits per week, second term. Required of Freshmen in Agriculture.*

II. Advanced Judging.—Practice in judging and a detail study of animal conformation. *Two laboratory credits per week, first term. Option for Seniors in Agriculture.*

III. Breeds.—History and characteristics of the principal breeds of farm animals. *Two recitation credits per week, second term. Required of Freshmen in Agriculture.*

IV. Principles of Breeding.—A study of the science and art of animal breeding. *Three recitation credits per week, second term. Option for Juniors in Agriculture.*

V. Management of Pure-Bred Herds, Flocks, and Studs.—Housing, feed, and management. Fitting animals for sale and for the show ring. *Two recitation credits per week, second term. Option for Seniors in Agriculture.*

VI. Feeding.—Principles of animal nutrition. Feeding standards. Rations. *Three recitation credits per week, first term. Required of Seniors in Agriculture.*

VII. Dairy Practice.—Lectures and laboratory practice with Babcock Test and in handling milk and making butter on the farm. *One recitation and one and one-half laboratory credits per week, first term. Required of Juniors in Agriculture.*

VIII. Dairy Practice.—Advanced work. Pasteurization. Starters. Testing for adulteration. Acidity. Moisture. *One recitation and one laboratory credit per week, second term. Option for Seniors in Agriculture.*

IX. Research and Literature.—A study of important results in live-stock research. Herd-book study. *Three recitation credits per week, first term. Option for Seniors in Agriculture.*

X. Veterinary Medicine.—Combating disease from the farmer's standpoint. Obstetrics. Injuries. *Three recitation credits per week, second term. Required of Seniors in Agriculture.*

XI. Farm Buildings.—Plans, location, and estimate on the various farm buildings. *Two laboratory credits per week, second term. Option for Juniors in Agriculture.*

XII. Poultry Craft.—A brief study of breeds, care, and management of all classes of fowls. *One laboratory credit per week, first term. Required of Freshmen in Agriculture.*

XIII. Judging Poultry.—Practice in scoring and judging all classes of fowls. *Two laboratory credits per week, second term. Option for Seniors in Agriculture.*

XIV. Thesis.—Original Investigation. *Required of Seniors electing Animal Husbandry.*

A. Breeds and Care.—Breeds of horses, cattle, sheep, and swine. Housing, care, and management of farm animals. *Two recitation credits per week, first term. Required of Short-Course students in Agriculture, first year.*

B. Stock Judging.—Judging of the various classes of animals, and their adaptability for different purposes; as cattle for milk or beef production, horses for driving or draft. *Two laboratory credits per week, first term. Required of Short-Course students in Agriculture, first year.*

C. Dairy Practice.—Babcock Test for dairy products, production of sanitary milk, and butter making. *One laboratory credit per week, first term. Required of Short-Course students in Agriculture, second year.*

D. Stock Feeding.—Principles of nutrition, compounding of rations. *Two recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.*

E. Breeding and Veterinary Practice.—A study of the principles of breeding, selection, heredity and variation. Methods of treating common diseases of farm animals. *Two recitation credits per week, second term. Required of Short-Course students in Agriculture, second year.*

F. Poultry Breeds and Care.—A study and comparison of the different breeds of poultry, care of incubators and brooders, methods of feeding for the production of meat and eggs. *One laboratory credit per week, second term. Required of Short-Course students in Agriculture, second year.*

## HORTICULTURE.

The aim of the instruction in horticulture is to help the student to understand the practical and scientific problems which arise in the various lines of work included under this subject.

The headquarters of the department are in the new horticultural building, which was erected in 1906. The main building contains the office and recitation rooms, together with photographic rooms. Attached to this building are greenhouses of modern construction, containing over 8,000 square feet under glass, 3,000 square feet of which is used by the experiment station for fertilizer experiments. The remainder is devoted to college work, and thus affords an excellent opportunity to become familiar with the growth of plants under glass. The land devoted to the department comprises the college gardens; and the fruit orchards, containing over 150 varieties of fruit, which afford an excellent opportunity for the study of apples and pears especially. There is also a small vineyard. A collection of flowering shrubs enables the student in landscape gardening to study, in the natural state, the material used in this work.

## Subjects.

I. Propagation of Plants.—Seedage, methods of seed testing; cuttage, hard and soft wood cuttings; layerage and graftage. *One recitation and one laboratory credit per week, second term. Required of Freshmen in Agriculture.*

II. Vegetable Gardening.—Methods of growing and marketing vegetables. *Two recitation credits per week, first term. Required of Sophomores in Agriculture.*

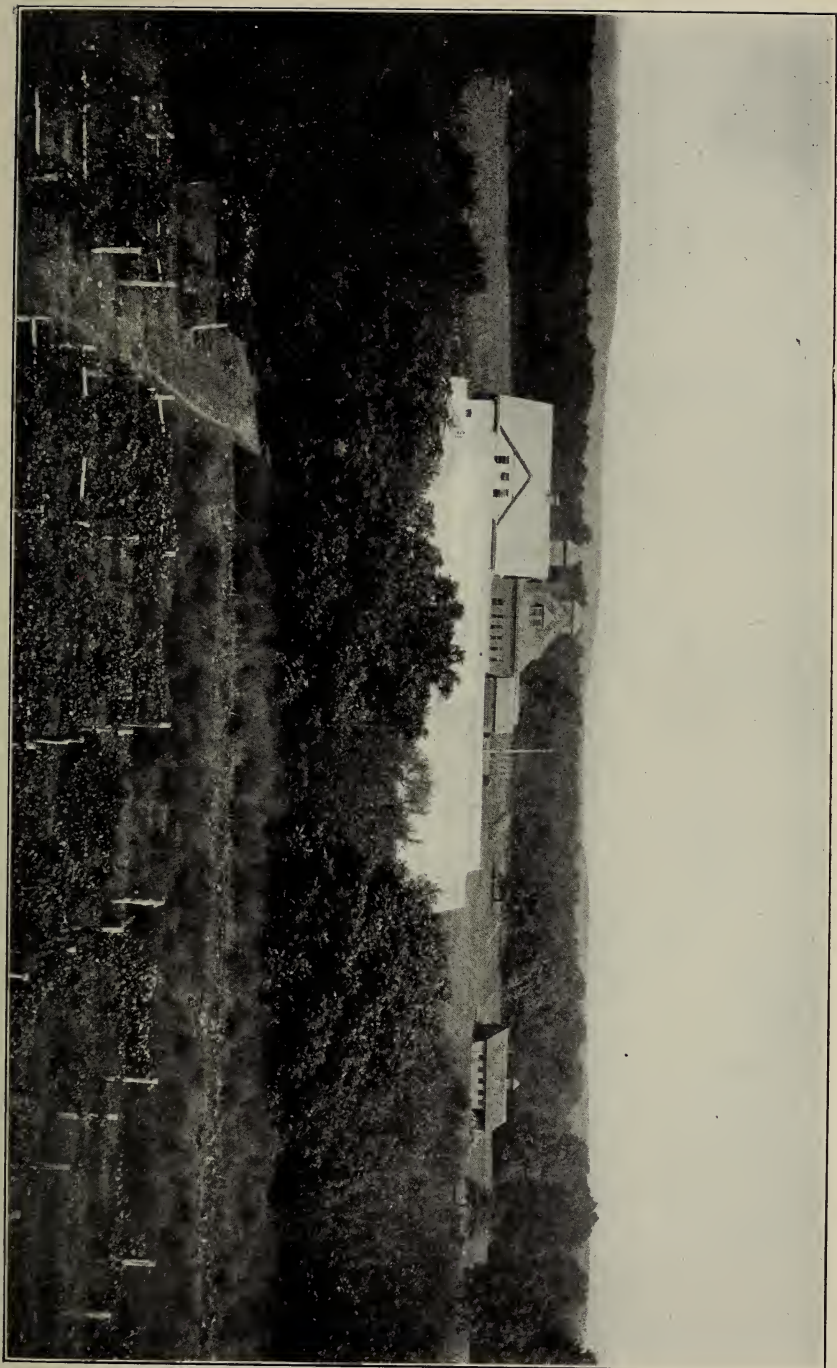
III. Fruit Culture.—Principles and practice of orcharding and growing of bush fruits. *Two recitation credits per week, first term. Required of Juniors in Agriculture.*

IV. Spraying and Pruning.—Spray mixtures, preparation and use; fungicides; insecticides; spraying machinery; methods of pruning different classes of trees and shrubs. *One laboratory credit per week, second term. Required of Sophomores in Agriculture.*

V. Greenhouse Construction and Management.—Construction and heating of greenhouses, preparation of plans, watering, ventilating. *One recitation and two laboratory credits per week, second term. Option for Juniors in Agriculture.*

VI. Floriculture.—A study of greenhouse plants; annuals; herbaceous perennials; bulbs for bedding and forcing. *One recitation and one laboratory credit per week, second term. Option for Seniors in Agriculture.*

VII. Vegetable Forcing.—Methods of growing vegetables under glass; in houses, hotbeds, and cold-frames. *Two recitation credits per week, second term. Option for Juniors in Agriculture.*



HORTICULTURAL DEPARTMENT,





VIII. Literature of Horticulture.—See Agronomy IX.

IX. Investigation.—Special problems upon subjects in which the student is particularly interested. *Option for Seniors in Agriculture.*

X. Varieties of Cultivated Fruits.—Classification and description of orchard fruits. *Two recitation and one laboratory credits per week, first term. Option for Seniors in Agriculture.*

XI. Advanced Vegetable Gardening.—Study of varieties for special purposes; market-garden rotations and equipment. *One recitation credit per week, first term. Option for Seniors in Agriculture.*

XII. Plant Breeding.—See Agronomy XI.

XIII. Landscape Gardening.—The principles underlying landscape gardening, as applied to the development of home and school grounds. *Two recitation credits per week, second term. Option for Seniors in Agriculture and Home Economics.*

A. Vegetable Gardening.—Methods of growing vegetables; hotbed and cold-frame management; garden rotations. *Three recitation credits per week, second term. Required of Short-Course students in Agriculture, first year.*

B. Fruit Culture.—The location of orchards and fruit plantations; methods of tillage, pruning, spraying for insects and fungous diseases. Varieties for home and market. *Two recitation credits per week, throughout the year. Required of Short-Course students in Agriculture, second year.*

## Botany.

PROFESSOR MERROW.

The aim of the department is to give a general knowledge of plant life, followed by subjects of an economic nature. The college is well located for carrying on this line of work. The native flora is extensive, and an abundance of material is furnished by the cultivated plants of the gardens and fields of the college farm. The greenhouses supply fresh material for winter use, and the herbarium of 4,000 specimens is a useful reference collection. The laboratory is equipped with dissecting and compound microscopes, a microtome, paraffin bath, and simple physiological apparatus. Charts and models are provided for lecture demonstrations. A good working library, including several American and foreign periodicals, is an important factor in the outfit for botanical instruction.

## Subjects.

I. General Botany.—A study of common plants, their structure, physiology, evolution, and adaptation to environment. The work includes a brief study of molds, yeasts, and bacteria, designed as an introduction to problems in which these organisms play a part. *Two laboratory credits and one recitation credit per week, throughout the year. Required of Freshmen in Agriculture, Applied Science, and Home Economics.*

II. Economic Botany.—The systematic botany of crops and weeds. *Two laboratory credits and one recitation credit per week, first term. Required of Sophomores in Agriculture and Applied Science.*

III. Trees and Shrubs.—The determination of native and introduced trees and shrubs in summer and winter condition. *One laboratory or field credit per week, throughout the year. May be elected by students having a minimum of six credits in Botany.*

IV. Forestry.—*Two recitation credits per week, second term. Required of Juniors in Agriculture. Elective in Applied Science.*

V. Histology.—Seed plants are studied by the usual histological methods of imbedding, sectioning, and staining. *Two and one-half laboratory credits and one recitation credit per week, first term. Elective.*

VI. Pathology.—Diseases caused by parasitic fungi and the remedies for them. *Two and one-half laboratory credits and one recitation credit per week, second term. Elective.*

A. Plant Life.—Elementary Agricultural Botany. *Two laboratory credits and one recitation credit per week, throughout the year. Required in the first year of the Short Courses in Agriculture and Domestic Science.*

## Chemistry.

DR. LEIGHTON, MR. SMITH.

Instruction in this department begins in the Freshman year with experimental lectures, recitations, and laboratory practice in general and descriptive chemistry. The work is designed to give a thorough elementary knowledge of theoretical and descriptive inorganic chemistry, including the principal technical processes, and a brief account of the carbon compounds. As much attention as is practicable in a general course is given to the applications of the science to the problems of life. Two periods per week for the year are devoted to the lectures and recitations, and three hours per week for a half-year to the practical work in the laboratory, where the student has an

opportunity to verify some of the chemical theories and to become familiar with substances and their chemical behavior. During the second half of this year the laboratory period is devoted to quantitative analysis, which continues through the first half of the Sophomore year. The subject is taught in part by means of recitations and lectures, but mainly by work in the laboratory. Students are required to complete a systematic course in basic and acid analysis, and to analyze correctly a number of alloys, salts, and minerals. Quantitative analysis is taught mainly by laboratory practice, but sufficient time is devoted to lectures and recitations to teach thoroughly the fundamental principles involved. The work comprises gravimetric and volumetric analysis, and the quantitative determination of salts, alloys, ores, minerals, and commercial and food products. In the course in technical gas analysis the student analyzes such gases as air, and illuminating and chimney gases. The work in assaying is designed to familiarize the student with the practical methods of sampling and assaying gold, silver, and lead ores. Determinative mineralogy, which includes blowpipe analysis and crystallography, is taught by recitations and laboratory work. The student learns the physical properties of the common minerals, and their identification. The above subjects cover a comprehensive study of analytical chemistry, and are intended to give the student such theoretical and practical knowledge as to prepare him for analytical work of any kind.

The study of organic chemistry begins with a short course, designed to cover the general principles and methods, and to include a description of the more important compounds. The subject is continued by those who wish to specialize in chemistry in a more extended course covering the aromatic series and the chemistry of the dyestuffs, and accompanied by laboratory work in organic preparations and analysis. The theoretical and basic principles of chemistry, with their general application, are thoroughly studied by recitations, lectures, and laboratory work in the course in physical chemistry.

The descriptive side of industrial chemistry, which comprises a general survey of the technical applications of chemical principles to the arts and industries, is studied by recitation work; while practical technical operations, such as textile coloring, suited to the needs of the individual student, are studied by laboratory practice. The principles and practice of the industrial preparation of iron, steel, and

other metals from their ores are taught by recitation and lecture work in the course in metallurgy.

Agricultural chemistry, required of agricultural students in the Junior year, embodies the chemistry of soils and fertilizers, also the chemistry involved in the changes which take place during the growth of animals and plants, as well as in the storage or manufacture of the ordinary farm products.

Subject XXI is intended to familiarize the student with the general field of chemical literature, and to inculcate the habit of keeping up with the recent advance in chemical science by reports and discussion of articles appearing in the chemical journals. This course is preparatory for thesis work, which involves original investigation.

The laboratory is supplied with water, gas, and compressed air at each desk; it is also well equipped with apparatus for the subjects mentioned below. Among the more important pieces of apparatus are a polariscope, microscope, sodium press, hot-air engine, five analytical balances, one assay balance, filter press, Wheatstone bridge, combustion furnace, bomb furnace, assay muffle, crucible and roasting furnaces, ore crusher and grinder.

A good working library, containing a large number of German, French, and English chemical journals, is also accessible.

### Subjects.

I. General Chemistry.—*Two recitation and one and one-half laboratory credits per week, first term. Required of Freshmen in all courses.*

II. General Chemistry and Qualitative Analysis.—*Two recitation and one and one-half laboratory credits per week, second term. Required of Freshmen in all courses.*

III. Qualitative Analysis.—*Basic and acid analysis; analysis of salts, industrial and natural products. Three laboratory credits per week, first term. Required of Sophomores in all courses.*

IV. Organic Chemistry.—*Three recitation and one laboratory credits per week, second term. Required of Sophomores in Chemical Engineering, Home Economics, Agriculture, and Applied Science. Elective for others who have completed Chemistry III.*

V. Organic Chemistry (advanced).—*To be given alternate years. Given next in 1909. Three recitation and one laboratory credits per week, first term. Required in Chemical Engineering. Elective for others who have completed Chemistry IV.*

VI. Organic Chemical Laboratory.—*Three laboratory credits per week, second term. Required of Juniors in Chemical Engineering. Elective for others who have completed Chemistry V.*



VII. Quantitative Analysis.—Gravimetric and Volumetric Analysis. Analysis of minerals, ores, alloys, and industrial products. *Three laboratory credits per week, first term; eight laboratory credits per week, second term. Required of Juniors in Chemical Engineering. Elective for others who have completed Chemistry III.*

VIII. Quantitative Analysis.—Like VII, but requires less time. *Three laboratory credits per week, first term; four and one-half laboratory credits per week, second term. Elective for those who have completed Chemistry III.*

X. Quantitative Analysis.—Food Analysis. *Two laboratory credits, throughout the year. Required of Seniors in Home Economics. Elective for others who have completed Chemistry IV.*

XI. Determinative Mineralogy.—To be given alternate years. Given next in 1910. *One and one-half laboratory credits per week, second term. Required in Chemical Engineering. Elective for others who have completed Chemistry III.*

XII. Physical Chemistry.—To be given alternate years. Given next in 1910. *Three recitation and one laboratory credits per week, first term. Required in Chemical Engineering. Elective for others who have completed Chemistry III.*

XIII. Metallurgy.—*Two recitation credits per week, first term. Required of Seniors in Chemical Engineering. Elective for others who have completed Chemistry II.*

XIV. Agricultural Chemistry.—*Three recitation and one laboratory credits, first term. Required of Juniors in Agriculture.*

XV. Gas Analysis.—To be given alternate years. Given next in 1911. *One and one-half laboratory credits per week, second term. Required in Chemical Engineering. Elective for others who have completed Chemistry III.*

XVI. Industrial Chemistry.—*Four recitation credits per week, second term. Required of Seniors in Chemical Engineering. Elective for others who have completed Chemistry IV.*

XVII. Industrial Chemistry.—The work under this subject may be varied to suit the needs of individual students; including such subjects as technical analysis and textile coloring. *Three laboratory credits per week, second term. Required of Seniors in Chemical Engineering. Elective for those who take Chemistry XVI.*

XVIII. Assaying.—*Two laboratory credits per week, second term. Required of Seniors in Chemical Engineering.*

XIX. Physiological Chemistry.—*Two exercises per week, throughout the year. Required of Juniors in Home Economics.*

XXI. Reports and Discussion of Chemical Subjects and Recent Investigations.—*One hour per week, for a year; required of Juniors in Chemical Engineering. Three hours the first term, and one hour the second term; required of Seniors in Chemical Engineering.*



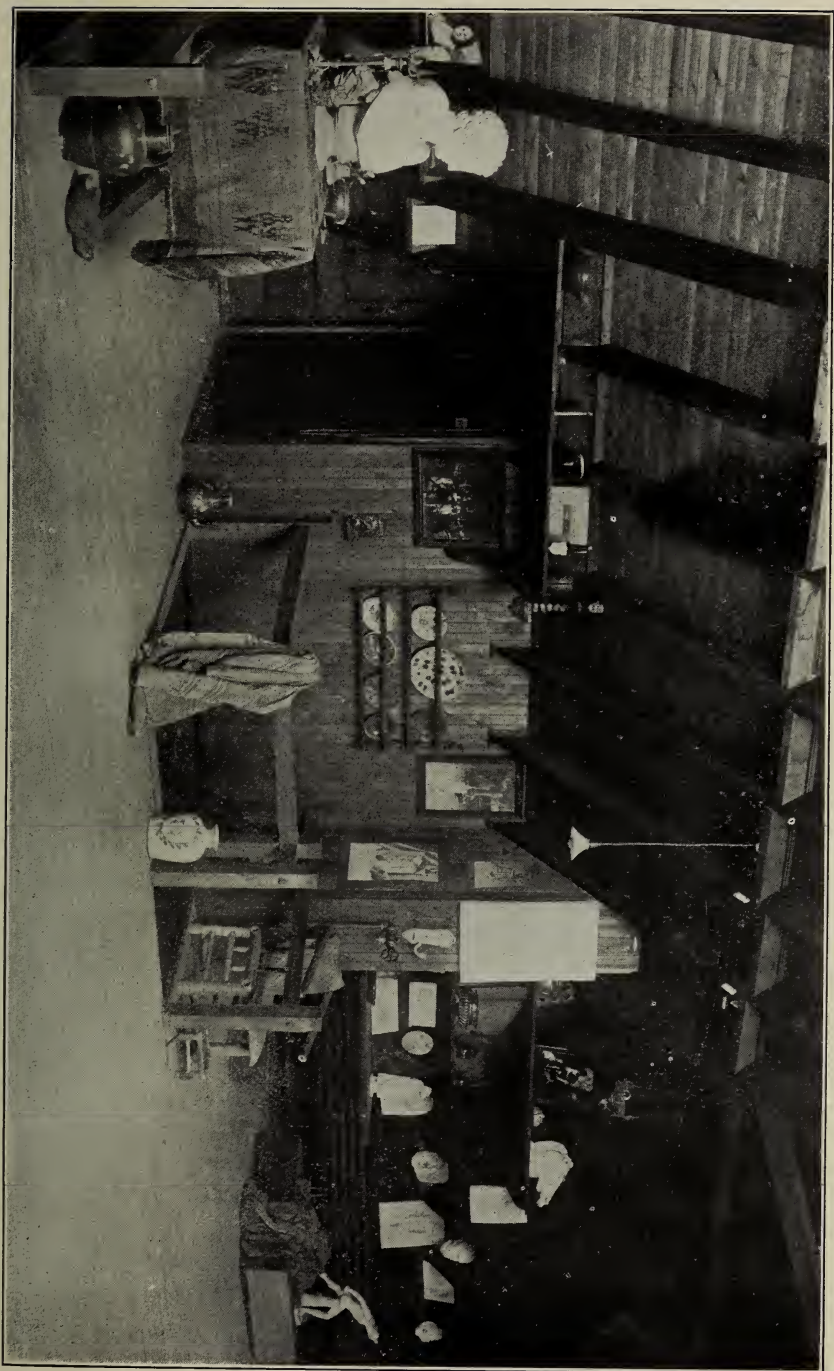
XX. Thesis.—*Required of Seniors in Chemical Engineering and those who take the Chemical option in Applied Science.*

A. Chemistry of Plant and Animal Life.—*Three recitation and one laboratory credits per week. Required of Short-Course students in Agriculture, second year.*

## Freehand Drawing.

MISS ELDRED.

The aim of the subjects described below is to supply the practice in drawing necessary for subsequent work in the science laboratories, and to give some knowledge of the elements of art and some appreciation of the beautiful in art and nature. In the agricultural course and the first term of the science courses, the work comprises outline drawing in pencil from plant and animal forms. The work of the second term in the science courses is planned upon broader lines, and includes, especially for the course in home economics, some attention to the principles of design. The architectural drawing is arranged to accompany the home-economics work in house construction, affording students an opportunity to work out under supervision the plans and details of construction considered in that course. In the following year the home-economics students take up during the second term the consideration of color,—the principle of color harmony and the use of color in design and decoration. The object of this work is to develop appreciation of color and to enable the student to exercise a more intelligent and sensitive discrimination in its use. The subject, history of art, aims to give some familiarity with the greatest achievements of past and present in architecture, sculpture, and painting. Following this general survey, the students in home economics give special consideration to the history of domestic architecture, where it is hoped they may find standards of dignity, simplicity, and fitness to which many of the problems of to-day in the same field may well be referred. These latter subjects are given mainly by means of lectures and the study of casts and photographs. The department has a considerable equipment of illustrative material of this kind, including a collection of about one hundred and fifty casts and over three hundred photographs of folio or larger size, with many smaller prints, among them the five hundred University Prints of Greek and Roman sculpture.



THE STUDIO.



### Subjects.

II. Pencil Drawing from Objects.—*Two laboratory credits per week, throughout the year; required of Freshmen in Applied Science. One laboratory credit per week, throughout the year; required of Freshmen in Home Economics. Five laboratory credits per week, first term; an option for entering students. One laboratory credit per week, second term; required of Freshmen in Agriculture.*

III. History of Art.—*Two credits per week, first term; one credit per week, second term. Required of Sophomores in Home Economics.*

IV. Color Problems.—*One laboratory credit per week, second term. Required of Sophomores in Home Economics.*

V. Drawing in Charcoal from Still Life and the Cast.—*Two laboratory credits per week, second term. Elective.*

VI. Pen-and-Ink Drawing, Water-Color, or Pastel.—*Two laboratory credits per week, second term. Elective.*

VII. Modeling.—*Two laboratory credits per week, second term. Elective.*

VIII. Architectural Drawing.—*One laboratory credit per week, throughout the year. Required of Freshmen in Home Economics.*

## Economic and Social Science.

PRESIDENT EDWARDS.

### Subjects.

I. Political Economy.—Text-book, supplemented by lectures, readings, and essays. The first term is devoted to the general principles of the subject; second term, to consideration of present-day problems. *Five recitation credits per week, first term, first twelve weeks. Required of Seniors in all courses.*

II. Agricultural Economics.—The study of agriculture as an industry, from the point of view of political economy. Includes a study of the agricultural market; transportation of agricultural products; agricultural labor; farm ownership and tenancy; mortgages, etc. *Elective.*

III. Rural Sociology.—Movements of the farm population—causes and results; general social conditions of farmer, such as illiteracy, health, crime, etc.; personal and social traits developed by rural life; means of communication in rural communities; the rural school; agricultural education; the country church; farmers' organizations; federation of rural social forces. *Elective.*

## Home Economics.

ACTING PROFESSOR LOOMIS.

The aim of this department is to give both theoretical and practical training in the economic administration of the home. The labora-



tory is situated in a building by itself, which is finished and furnished in such a manner as to demonstrate the sanitary principles involved in proper kitchen arrangements. It is amply equipped with the most recent scientific cooking-apparatus, inclusive of thermometers, metric scales, different kinds of stoves, and individual utensils. The work in chemistry, biology, etc., is, however, carried on in the laboratories of those departments. There is a good home-economics library, and students are expected to make intelligent use of the main library in reference work, as well as to study those bulletins of the Department of Agriculture and such state reports as deal particularly with the subjects of food and nutrition.

### Subjects.

I. House Construction, Sanitation, and Cost.—A study of the house, its construction, situation, and surroundings; heating, lighting, ventilation, water supply, and drainage. *Two recitation and one-half laboratory credits, first term. Required of Freshmen in Home Economics. Open to all college students.*

II. Principles of Selection and Preparation of Food.—The nature and uses of food; its chemical composition, and the changes effected by heat, cold, and fermentation. Methods by which heat is applied to food; study of fuels and cooking-apparatus. *Two laboratory and two recitation credits per week, second term. Required of Freshmen in Home Economics. Prerequisite: Chemistry I.*

III. Household Hygiene.—Cleansing processes; cleaning and care of house, food, and food supplies. Application of bacteriology to care of house and food. *One recitation and one-half laboratory credits per week, second term. Required of Freshmen in Home Economics. Prerequisite: first term Botany I.*

IV. Economic Uses of Food.—Continuation of Subject II, with emphasis on the economic side of the food question. Production, manufacture, and preparation of staple foods; factors affecting cost. *Three laboratory and two recitation credits per week, first term. Required of Sophomores in Home Economics. Prerequisites: Chemistry I, Botany I.*

V. Personal Hygiene.—This course considers the aim of personal hygiene as the maintaining of the most efficient human machine for the life needs of the individual. It endeavors to give and establish ideals of health and efficiency. Includes instruction in first aid to the injured. *One recitation credit per week, throughout the year. Required of Sophomores in Home Economics and of all women Freshmen in other courses.*

VI. Home Decoration.—Continuation of Subject I. A study of the evolution of the house; its adaptation to modern conditions; the principles to be followed in planning, furnishing, and decorating the house from a sanitary and artistic standpoint. *Two recitation credits per week, second term. Required of Sophomores in Home Economics.*



VII. Dietetics.—Principles of diet; relation of food to health; adaptation of food to age, sex, and occupation. *Two laboratory credits per week, second term. Required of Sophomores in Home Economics. Prerequisite: Home Economics II and IV.*

VIII. Food Supplies and Dietaries.—Nutritive and money values of food stuffs; construction of dietaries; adulterations; methods of preservation, etc. *One laboratory and two recitation credits per week, first term. Required of Juniors in Home Economics. Prerequisites: Home Economics VI, Chemistry III and IV.*

IX. Public Hygiene.—Takes up such phases of the subject as have a direct practical bearing on public health and principles of individual and social hygiene. An application of bacteriology to municipal hygiene, water, and food supplies, sewage disposal, etc. *One recitation credit per week, first term. Required of Juniors in Home Economics. Prerequisite: Botany I. Open to all Juniors and Seniors.*

X. Textiles.—A study of fabrics; processes and appliances studied with reference to their historic development; primitive industries; modern processes of manufacture; experimental and laboratory work; dyeing, spinning, and weaving. *Two recitation credits per week, second term. Required of Juniors in Home Economics. Prerequisite: first term of History I.*

XI. Child Hygiene.—A study of the physical development of children; care of infants and young children; school hygiene. *Two recitation credits per week, second term. Required of Juniors in Home Economics. Prerequisite: Psychology. Open to Juniors and Seniors in other courses.*

XII. Household Art.—Theory of color and its use in the home; effect of different textiles and their economic use; materials suitable for various uses in the home, and their hygienic properties. *Two recitation credits per week, first term. Required of Seniors in Home Economics. Prerequisites: Freehand Drawing IV, Home Economics I, VI.*

XIII. A Study of the Family.—Development of the domestic institutions; social ethics of the family; legal, industrial, and educational problems of the household. *Two recitation credits per week, first term. Required of Juniors in Home Economics. Open to Juniors and Seniors in other courses.*

XIV. Household Administration.—A study of the administration of the home, inclusive of proper apportionment of income and maintenance of suitable standards. *Three recitation credits per week, second term. Required of Seniors in Home Economics. Prerequisite: Economics I.*

XV. History of Home Economics.—Development of home-economics movement; a study of the work as presented in different types of institutions, and its industrial, educational, and sociologic aspects. *Two recitation credits per week, second term. Required of Juniors in Home Economics. Option A. Open to special students.*

XVI. Teaching of Home Economics.—Purpose and method of the work; courses of study, equipment, etc. *One recitation credit per week, first term. Required of Seniors in Home Economics. Option A.*

XVII. Thesis.—This may be a problem in the biological, chemical, physiological, or economic aspect of the work in Home Economics. *Three credits, throughout the year. Required of Seniors in Home Economics.*

#### DOMESTIC SCIENCE.

A. Household Technique.—This course is planned to give a knowledge of the processes involved in household work. It deals with the handwork of cooking and cleaning; care of rooms; table setting and serving, etc. *Two and one-half laboratory and one recitation credits per week, throughout the first year. Required of Short-Course students.*

B. Care of the House.—Principles of housework; labor-saving appliances; how to clean the house and its furnishings; repairing—the use of varnishes, paints, etc., and how to care for finished surfaces. *One laboratory and two recitation credits per week, second term, first year. Required of Short-Course students.*

C. A Study of the Modern American Home.—Its development, the development of its industries; how its comfort, beauty, and surroundings may be improved. *Two recitation credits per week, second term, first year. Required of Short-Course students.*

D. Foods.—Provides instruction in advanced cooking; special cooking for sick and convalescent; planning of meals; discusses food for different ages and conditions. *Two laboratory credits per week, throughout the second year. Required of Short-Course students.*

E. Management of the House.—Considers the materials, qualities, amounts, and cost of house furnishing and supplies; lessons in marketing. *Three recitation credits, throughout the second year. Required of Short-Course students.*

F. Hygiene.—Study of the living machine, its mechanism and functions; the right use and proper care of the human mechanism; home nursing and emergencies. *Two recitation credits per week, throughout the second year. Required of Short-Course students.*

#### EDUCATION.

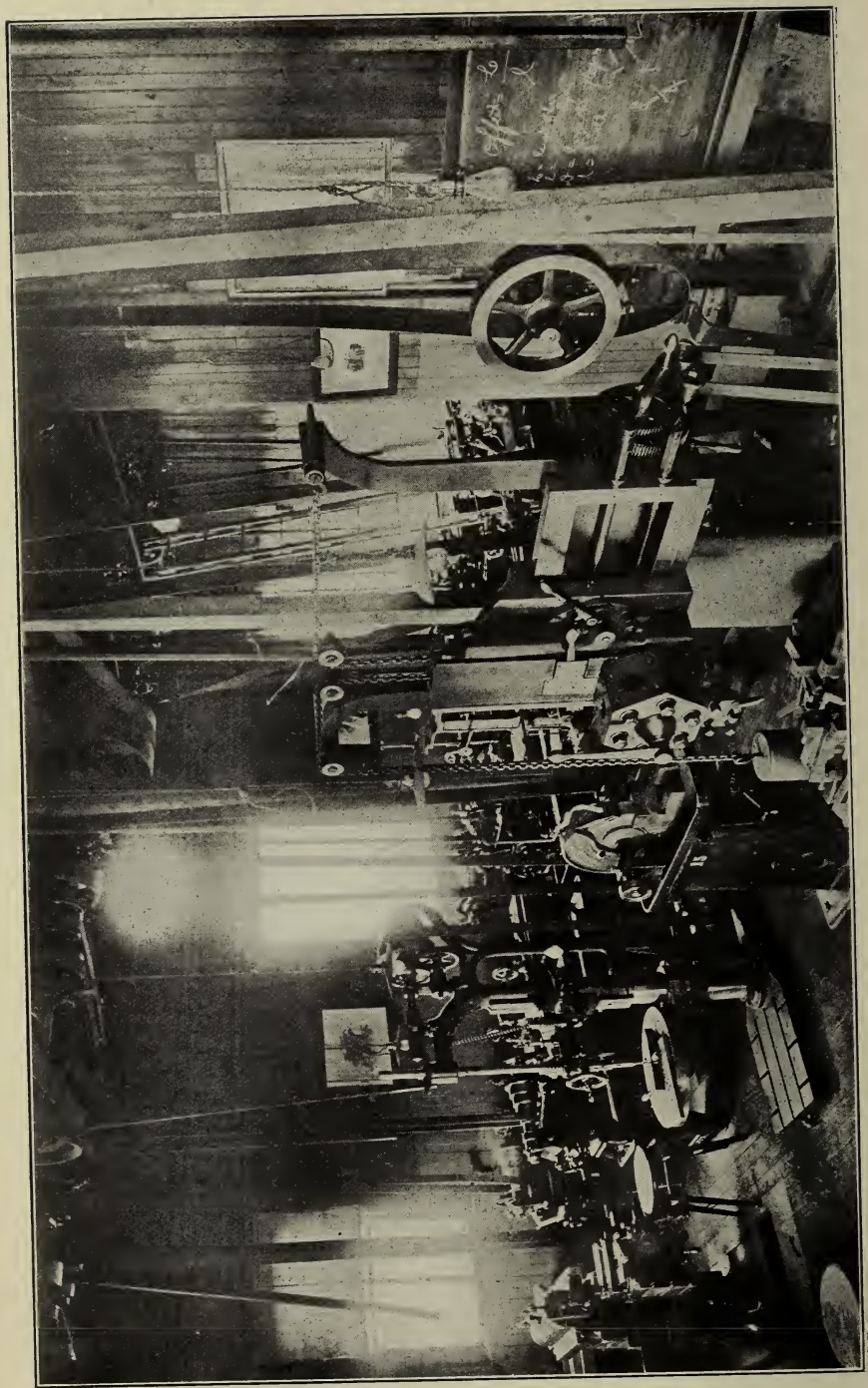
I. History of Education.—Study of the educational ideas and practices of the historical periods as a basis for the interpretation and appreciation of the essential features of modern education. *Three recitation credits per week, first term. Required of Juniors in Home Economics. Option A.*

II. Principles of Education.—The meaning and aim of education; modern educational theories; the biological, physiological, and psychological aspects of education. *Two recitation credits per week, second term. Required of Juniors in Home Economics. Option A.*

III. Methods in Education.—Discussion of the organization and problems of the school; influence of personality of teachers; methods of teaching and study; considerations of subjects of study. *Two recitation credits per week, first term. Required of Seniors in Home Economics. Option A.*

IV. Practicum.—Applied methods of teaching based on actual operations of class and observation work. Practice teaching in different classes. Hours arranged. *Four credits, second term. Required of Seniors in Home Economics. Option A.*





MACHINE SHOP.



## Mechanical Engineering.

PROFESSOR WALES, MR. ELDRED.

It is the object of the work in the department of mechanical engineering to turn out broad-gauged, self-dependent men, well trained in engineering theory, familiar with the practical matters of construction and operation, and having some knowledge of the economic relations which the engineer and industrial development bear to modern society. In the endeavor to train men who will touch life, not at one point, but at many, the work of the department is supplemented and rounded out by extended and vigorous courses along the lines of electrical engineering, physics, mathematics, chemistry, English, history, modern language, and political economy. The special work of the department of mechanical engineering divides itself naturally into the following general groups: shop practice, design, steam engineering, and experimental engineering. Each of the above groups is amplified and briefly described below:

### Shop Practice.

The object of this work is to give familiarity with principles, operations, possibilities, and management, rather than to develop the greatest dexterity in manipulation. Shop practice extends over three years of the course, and comprises forging and foundry work, pattern making, and machine-tool operation. The shops are exceptionally well equipped with machines and tools of all kinds. In the machine shop are six metal lathes, speed lathes, planer, 16-in. shaper, two drills, two tool grinders, drill grinder, milling machine, punching-press, vertical boring and turning mill, together with the usual assortment of tools and auxiliaries. The pattern shop is provided with lathes, circular saw, band saw, jig saw, dowel machine, surface and buzz planers, etc. Fifteen work-benches fully provided with the small tools of the pattern maker complete the equipment. The forge shop is equipped with the usual anvils, forges, fullers, swages, hardies, etc., while a full stock of patterns, shovels, riddles, flasks, and trowels are provided for the work in foundry practice. Enthusiasm is given to the work by the construction of things of real value—a new machine for the shop, or a piece of apparatus for the laboratory—instead of spending the whole time on worthless “exercises.”



## Design.

The work along the lines of design extends throughout the four years, beginning with freehand and mechanical drawing and ending with machine design and power-plant design in the Senior year. Leading up to this final work are the terms of mechanical drawing, descriptive geometry, mechanism, valve gears, dynamics of machines, mechanics, strength of materials, hydraulics, and thermodynamics. All the forces of correct theory and the practice of the most successful builders are brought to bear upon the solution of definite, practical problems.

## Steam Engineering.

Steam engineering begins in the Junior year and runs through the remainder of the course. A rigorous study of the mathematical theory of thermodynamics supplies the foundation for the study of boilers and engines, design and economy, and the various devices and auxiliaries of the power plant. In the Senior year is considered the particular branch of heating and ventilating. In this year, also, the subject of power plants is taken up, which applies all the previous training in steam engineering, and which brings together and unifies all allied subjects.

## Experimental Engineering.

This subject, which extends throughout the Junior and Senior years, is intended to fix the theory developed in all the other lines of work. Instruction is given by means of lectures and laboratory tests. The student becomes familiar with the theory, construction, use, and calibration of the instruments and apparatus used by the engineer, and gains experience in making accurate standard and special tests. The work is divided into four groups: one dealing with the chemical problems of engineering—testing of gases, oils, fuels, feed water, etc.; a second, with general calibration and testing; a third, with the study and tests of structural materials; and the fourth, with general power-plant testing. In power-plant testing the students make the necessary plans and preparations, perform the experimental work, and prepare formal reports, with recommendations for improvement in economy etc. These tests are made not only on the college power-plants, but on those of manufacturing establishments of the state. The equipment for experimental work comprises several boilers and steam engines, large steam pump,

hot-air engine, feed, water heaters, several steam and gas engine indicators, steam calorimeters, tanks, scales, injectors, water turbine, hydraulic ram, meters, gauges, 50,000-lb. tension and compression machine, apparatus for oil and gas testing, fuel calorimeter, complete outfit for testing cements and concretes, etc. Throughout the work the greatest stress is laid upon the correct calculation and interpretation of results, and accuracy and self-dependence are developed to the fullest.

### Subjects.

I. Mechanical Drawing.—Lettering, freehand sketching, use of drafting tools, geometrical problems, projections, machine parts. *Three laboratory credits, throughout the year. Required of Freshmen in Engineering and First-Year Short-Course students in Engineering. One and one-half laboratory credits, first term. Required of Freshmen in Agriculture.*

II. Forge and Foundry.—Forging, drawing, bending, welding, etc. Principles of moulding, core making and casting. *Three laboratory credits per week, first term. Required of Freshmen in Engineering and First-Year Short-Course students in Engineering. One laboratory credit per week, first term. Required of Juniors in Agriculture.*

III. Pattern Making.—Use of tools, bench and lathe work, pattern making. *Three laboratory credits per week, second term. Required of Freshmen in Engineering and First-Year Short-Course students in Engineering.*

IV. Elementary Mechanics.—An introduction to the study of applied mechanics, embracing work in forces, resolution and combination, parallel forces, centre of gravity, couples, determination of stresses both analytically and graphically. *Two recitation credits per week, second term. Required of all Sophomores in Engineering.*

V. Descriptive Geometry.—Elementary principles; problems relating to the point, line, plane, cylinder and double curved surfaces of revolution, intersections and developments. *Three recitation credits per week, first term. Required of all Sophomores in Engineering and Second-Year Short-Course students in Engineering.*

VI. Mechanical Drawing.—Detail and assembly drawings, elementary machine design. *Two laboratory credits per week, second term. Required of Sophomores in Mechanical, Electrical and Civil Engineering; also of Second-Year Short-Course students in Engineering.*

VII. Machine Shop.—Hand work in chipping and filing, use of machine tools, construction of machines. *Three laboratory credits per week, second term. Required of Sophomores in Mechanical, Electrical, and Civil Engineering. Three laboratory credits per week, throughout the year. Required of First-Year Short-Course students in Engineering. One and one-half laboratory credits per week, second term. Required of Juniors in Agriculture.*

VIII. Pattern Making.—Continuation of Course III. *Two laboratory credits per week, second term. Required of Sophomores in Mechanical Engineering.*

IX. Steam Engineering.—Boilers and Thermodynamics.

Boilers.—Types, advantages and disadvantages, fuels, flue-gases, heat losses corrosion and incrustation, strength, accessories, valves, piping, shop practice, design. Text, Peabody and Miller.

Thermodynamics.—Mathematical discussion of laws, application to perfect gases, saturated vapors, superheated vapors, flow of fluids, engine economy, effect of cylinder walls, compounding, superheating, use of jackets, effect of varying cut-off, speed, pressure, etc., friction, hot-air and gas engines, refrigerating machines, compressed-air transmission, injectors, thermodynamic principles applied to the steam turbine. Text, Peabody's Thermodynamics of the Steam Engine. *Three recitation credits per week, throughout the year. Required of Juniors in Mechanical, Electrical, and Civil Engineering, and for twenty-seven weeks of Juniors in Chemical Engineering.*

X. Applied Mechanics.—Forces, composition and resolution, parallel forces, moments, couples, centres of gravity, velocity, acceleration, energy and momentum, falling bodies and projectiles, centrifugal force, moment of inertia, radius of gyration, angular momentum, energy of rotating bodies, impact, etc. Strength of materials, stresses in structures, riveted joints, beam theory, struts, columns, shafting, springs, etc. Solution of practical problems. Text, Lanza's Applied Mechanics. *Five recitation credits per week for twenty-four weeks. Required of Juniors in Mechanical, Electrical, and Civil Engineering, and of Juniors in Chemical Engineering for the first term.*

XI. Hydraulics.—General principles, head and pressure, centre of pressure, velocity of discharge, flow through orifices and over weirs, Bernouilli's theorem, flow through pipes, flow through conduits and canals, energy of flow, horse powers, hydraulic machinery, rams, turbines, centrifugal pumps, and Pelton wheels. Merriman's Treatise on Hydraulics. *Five recitation credits per week, for last twelve weeks of second term. Required of Juniors in Mechanical, Electrical, and Civil Engineering.*

XII. Mechanism.—Instantaneous centres, centroids, lobed wheels, belts, pulleys, four-bar linkages, graphical determination of velocity ratios, quick-return motions, straight-line motions, pantographs, trains of gears, epicyclic trains, tooth gearing, epicycloidal and involute teeth, bevel wheels. etc. Schwamb and Merrill's Mechanism. *Three recitation credits per week, first term. Required of Juniors in Mechanical and Seniors in Chemical Engineering.*

XIII. Valve Gears and Dynamics.—Plane slide valves, piston valves, riding cut-off valves, Joy and Marshall gears; Stephenson, Gooch and Walschart link motions; drop cut-off valves; Corliss, Brown and Putnam valves; dynamics of high-speed engine; analysis of stresses; effects of inertia; balancing, etc. Peabody's Valve Gears. Lectures and references. *Three recitation credits, for the second term. Required of Juniors in Mechanical Engineering.*

XIV. Machine Shop (continuation of course VII).—Advanced work in machine construction. *Three laboratory credits per week, throughout the year. Required*

of Juniors in Mechanical Engineering, and Second-Year Short-Course students in Engineering.

XV. Experimental Engineering.—a.—Lectures and laboratory work in gases, oils, and fuels; flue gas analysis, calculation of air per pound of coal, loss due to excess air and to imperfect combustion; analysis of fuel gases and calculation of heating values; determination of heating values by the Junkers and Parr calorimeters; study of gases in producer and gas-engine work. *Two laboratory credits, first term. Required of Juniors in Mechanical, Electrical, and Civil Engineering.*

XVI. Experimental Engineering.—b.—General calibration and testing of engineering instruments and apparatus; gauges; planimeter; manometers; indicators; Prony brakes; scales; valve setting by measurement and by the indicator; Carpenter calorimeter; Peabody calorimeter; flow through orifices; weirs; nozzles; Pitot tube; meters; Venturi meters; hydraulic ram; turbine, etc. *Two laboratory credits per week, second term. Required of Juniors in Mechanical, Electrical, and Civil Engineering.*

XVII. Experimental Engineering.—c.—Properties of materials. Lectures on the metallurgy of iron and steel; effects of impurities; coldworking; repeated stresses; tensile, compressive, and shearing strengths; ductility; resilience, etc.; copper, brass, bronze, and other alloys; timber, stone, and brick. The manufacture of natural and Portland cements; effects of over and under burning, overliming,  $\text{SO}_3$ , etc.; discussion of tests and their interpretation. Laboratory work is parallel with lectures. Tensile strengths of cast-iron, wrought-iron, and steel; compressive strength of metals, timber, concrete, cement; shearing tests of metals; transverse tests of timber and iron; stress—strain diagram, elastic limit, yield point, modulus of rupture; tensile tests of cement; pat tests, boiling tests; specific gravity; fineness; time of set, etc. Determination of the best proportions of cement, sand, and rock of given characteristics. *Two lecture and two laboratory credits, first term. Required of Seniors in Mechanical, Electrical, and Civil Engineering.*

XVIII. Experimental Engineering.—d.—Hot-air engine, gas engine, steam pump, injectors, transmission dynamometers; boiler tests; complete tests of power plants; outside work on the H. P. of a stream, with tests of hydraulic power plant; outside tests of manufacturing plants, with calculations, reports, and recommendations. *Two lecture and two laboratory credits, second term. Required of Seniors in Mechanical Engineering. The laboratory work will also be taken by Seniors in Civil Engineering.*

XIX. Heating and Ventilation.—Discussion of the principles and practice of the various systems of heating and ventilating—direct and indirect, hot-air, hot water, pressure steam, exhaust steam, vacuum systems, fans, blowers; calculation of ventilation and radiation; flues, pipes, and radiators; air troubles; central heating systems with central power plants; design of heating system for a given building. *Two recitation credits per week, second term. Required of Seniors in Mechanical Engineering.*

XX. Machine Design.—Design of machine parts from considerations of the motions involved, strength, rigidity, and friction; design of a complete machine;



calculations with design of some type of engine, starting with given requirements of H. P., speed, etc., and with an assumed theoretical indicator card. *Three laboratory credits, throughout the year. Required of Seniors in Mechanical Engineering.*

XXI. Power plants and power-plant design.—Study of the various types—as to choice, location, installation, and operation; prime movers, their accessories and auxiliaries.

Steam Plants.—Study of the effects on economy, range, and reliability of simple or compound, condensing or non-condensing engines with various valve gears, throttling and cut-off governors, different boiler installations, feed-water heaters, economizers, pressure regulators, pumps, injectors, mechanical stokers, forced and induced draft, chimneys, etc.; calculations of proper sizes, powers, and strengths of machines and apparatus of the power plant; methods of improving economy. The place of the steam turbine in power-plant work.

Hydro Plants.—Discussion of the types of hydraulic machinery, their efficiency and the particular conditions to which each is best adapted. This will be a development of the previous work in hydraulics to meet the need of the power engineer.

Gas-Producer Plants.—The different suction and pressure producers, theory, capacity, future, etc.; gas engines, from both the thermodynamic and the mechanical points of view. *Three laboratory credits, first term; two laboratory credits, second term. Required of Seniors in Mechanical Engineering.*

XXII. Thesis.—*Required of Seniors in Mechanical Engineering.*

D. Elementary Mechanisms.—Belts, pulleys, gearing, screw gearing, differential screws, tackles, hoists, hydraulic jacks, inclined planes, differential pulleys, pumps, crank and rocker, sliding and swinging block mechanisms, shafts, hangers, etc., cams and their design. *Three recitation credits, throughout the year. Required of First-Year Short-Course students in Engineering.*

E. Engineering Theory.—An elementary discussion of types of engines, valve gears, governors, etc., boilers, types, corrosion and incrustation, combustion, methods of firing, draft, safety valves, boiler H. P. testing; lubricants and lubrication; gas engines; elementary study of materials; practical electricity. *Five recitation credits, throughout the year. Required of Second-Year Short-Course students in Engineering.*

J. Forging and Machine Shop.—*Two shop credits per week for twenty-four weeks. Required of Second-Year Short-Course students in Agriculture.*

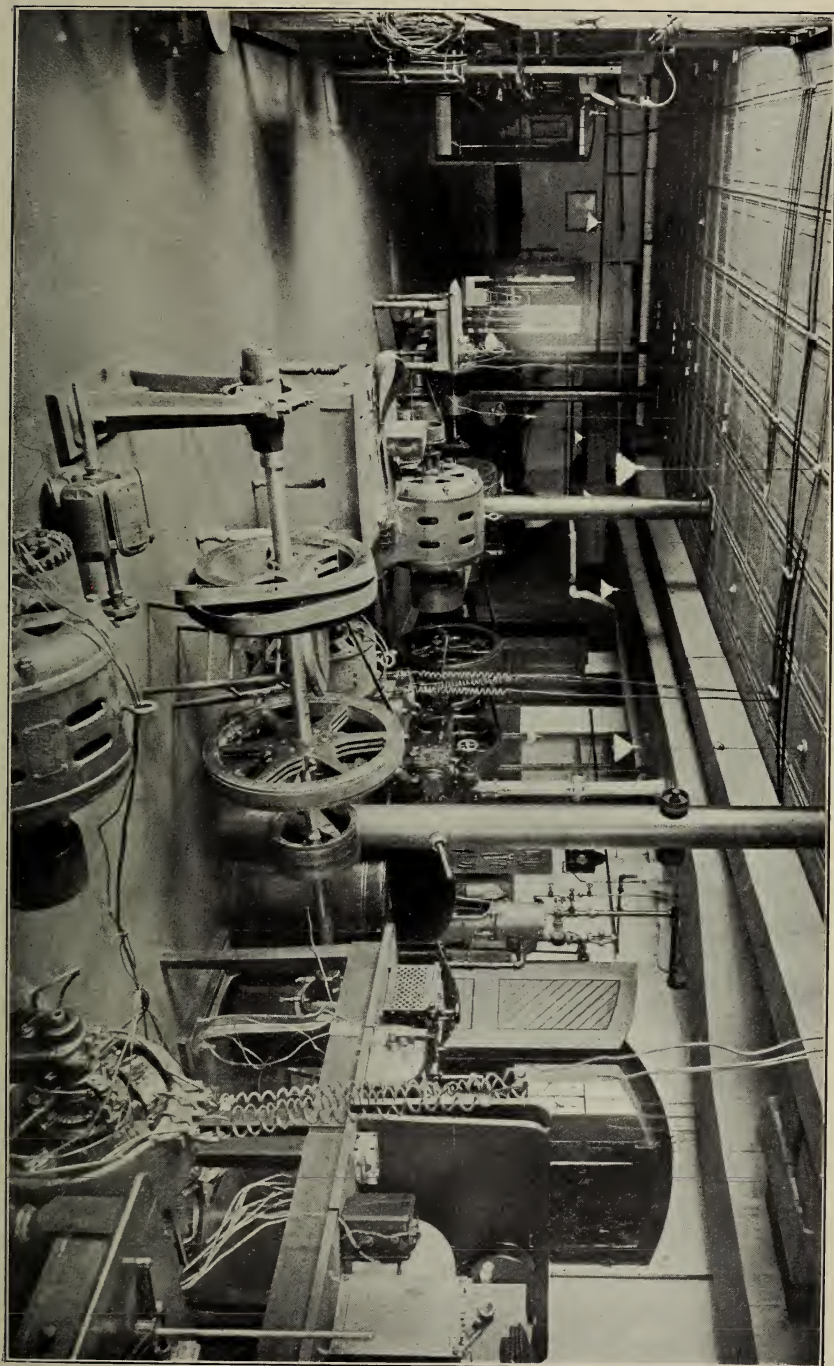
## Electrical Engineering.

PROFESSOR TOLMAN, MR. J. A. FOTTLER.

The aim of the course in electrical engineering is to give to a student pursuing it a satisfactory knowledge of the fundamental principles of the subject, and, building upon these, to acquaint him with the practical application of them to electrical machinery and to the distribution of electricity for lighting, railroads, and power purposes.



ELECTRICAL LABORATORY.





The department is prepared to make laboratory tests of electrical machinery, and the time given to practical work is a large part of that required in the course.

### Subjects.

I. Theory of Direct Currents.—A detailed study of the theory of direct current apparatus. The theory, use, care of the dynamo. *Three recitation credits per week, first term. Required of Juniors in Electrical Engineering and of Seniors in Mechanical and Civil Engineering.*

II. Direct Current Measurements.—A course following Physics V and consisting of tests of various types of direct current apparatus. These include magnetization and characteristic curves of different types of machines. Efficiency, regulation, temperature, and other tests are included in this course. *Three laboratory credits per week, second term. Required of Juniors in Electrical Engineering.*

V. Theory of Alternating Currents.—Recitations and lectures. Alternating current theory and practice dealing with alternating current machinery, such as the A. C. dynamos, synchronous and induction motors, converters, and transformers. *One and one-half recitation credits per week, second term. Required of Juniors in Electrical Engineering and of Seniors in Mechanical Engineering. Three recitation credits per week, throughout the year. Required of Seniors in Electrical Engineering.*

VI. Alternating Current Measurements.—A course following Physics VII and consisting of tests of different types of alternating current apparatus. Single and poly-phase generators and motors, synchronous and induction motors, converters, and transformers. *Three laboratory credits per week, throughout the year. Required of Seniors in Electrical Engineering.*

VII. Design of Electrical Machinery.—General principles of design of electrical apparatus, including the design of a direct and alternating current generator. *Three laboratory credits per week, second term. Required of Seniors in Electrical Engineering.*

VIII. Telephone Engineering.—Discussion of the development of the telephone and modern telephone practice. *One recitation credit per week, first term. Required of Seniors in Electrical Engineering.*

IX. Electric Illumination.—A consideration of units of illumination and the measurement of candle power. The theory of spherical photometry and integrating photometers. The study of different types of arc, incandescent, and vapor lamps, shades and reflectors. *One and one-half recitation credits per week, second term. Required of Juniors in Electrical Engineering.*

X. Transmission of Energy.—A study of systems of high-tension distribution, including the construction of the lines, insulation, protection, and troubles developing in high-tension work. *Two recitation credits per week, first term; and one recitation credit, second term. Required of Seniors in Electrical Engineering.*

XI. Electric Railway Engineering.—Discussion of economic considerations in the development of an electric railway, the construction, location of generating station, the design of the distributing system, types of motors and systems of control. *Two recitation credits per week, first term. Required of Seniors in Electrical Engineering.*

XII. Thesis.—*Required of Seniors in Electrical Engineering.*

## Civil Engineering.

PROFESSOR WEBSTER.

It is the purpose of this course to give the student such training in the fundamental principles of engineering as to prepare him for the duties and opportunities that may be offered in the various fields of civil engineering. With this object in view, application of the theories and principles learned in the classroom is made in the field, laboratory, and drafting-room. An effort is also made to give the student as liberal a training in the sciences and arts as his limited time will permit, but the primary purpose is to prepare him for one definite line of work.

In order to widen the scope of the student's opportunities, the name of the department has been changed from Highway Engineering to Civil Engineering, and corresponding changes have been made in the course of study. However, owing to the growing importance of highway engineering in this state and throughout the country in general, considerable emphasis is still placed on this phase of engineering work. The state appropriates annually a sum of money which is expended under the direction of the instructor and students of the department in the construction and maintenance of roads on the college property. In this way practical experience is obtained in highway engineering.

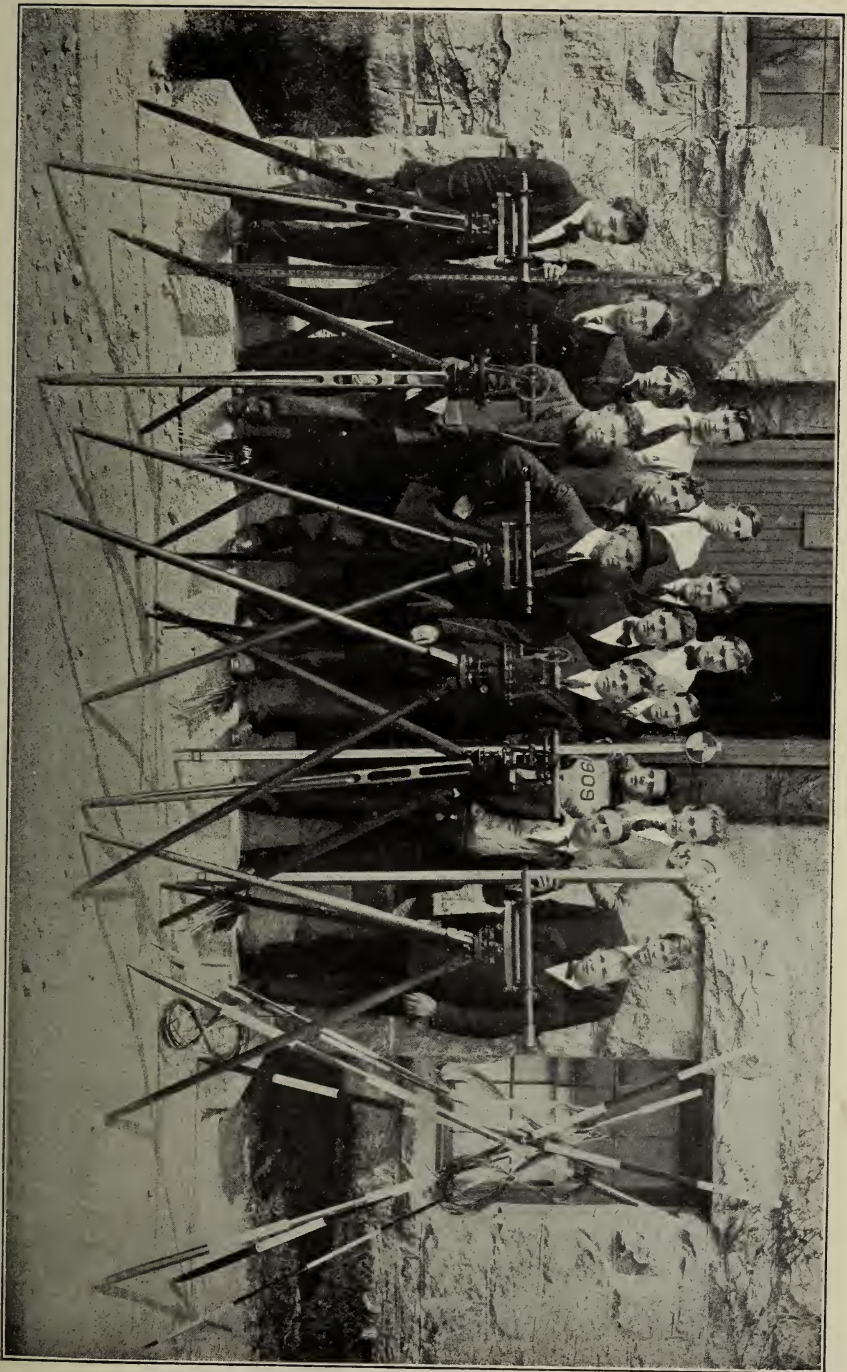
The equipment of the department consists of levels, transits, compasses, rods, tapes, chains, drafting instruments, etc., and testing machines, to which the student has access. He also has free use of the library, in which are found the leading engineering journals, and many of the principal works on various engineering subjects.

### Subjects.

I. Surveying.—Instruction is given by means of recitations, field and laboratory work, in the theory, use, and adjustments of the compass, level, and transit. The field work includes the prolongation of straight lines, determination



READY FOR FIELD WORK.







of distances, angles, areas, boundaries, corners, and exercises in leveling, etc. Maps are made from the field notes. *One recitation and two field credits per week, first term. Required of Sophomores in Mechanical, Electrical, and Civil Engineering.*

II. Topographic Surveying.—A study is made of the theory and use of the plane table, and of the transit and stadia in making topographic surveys. A complete topographic survey based on a system of triangulation is made, including the completion of a map. *One recitation and two field credits per week, second term. Required of Sophomores in Civil Engineering.*

III. Railroad Engineering.—The work consists of a reconnoissance, a preliminary and a location survey of a short line of railroad, for the purpose of giving the student sufficient work to familiarize him with the methods in actual practice. A set of notes is kept by each student, from which a map, a profile, and estimates are made. A study is also made of the properties of curves, switches, frogs, turnouts, and the spiral, and the methods of locating these in the field. *Four credits per week, divided between field and recitation as seems advisable, first term. Required of Juniors in Civil Engineering.*

IV. Graphic Statics.—Instruction is given in graphic statics and its application in the design of simple framed structures. *Two recitation credits per week, first term. Required of Juniors in Civil Engineering.*

V. Roads and Pavements.—The theoretical work of this course consists of a discussion of the principles and details involved in the location, construction, and maintenance of earth, gravel, and macadam roads, together with a discussion of the methods of construction, durability, maintenance, and assessment of cost of the various kinds of pavements used on city streets. The field work consists in the construction of a gravel or macadam road on the college grounds. *Three recitation and one field credits per week, second term. Required of Juniors in Civil Engineering.*

VI. Bridge Details.—The work in this course consists in making a tracing of a shop drawing, estimating the weight and determining the efficiency of the various members of a highway bridge. *One laboratory credit per week, first term. Required of Seniors in Civil Engineering.*

VII. Bridge Analysis.—Instruction is given in the computation of stresses in the various types of bridges by graphical and algebraic methods under different conditions of loading. *Two recitation credits per week, first term. Required of Seniors in Civil Engineering.*

VIII. Bridge Design.—The student designs a plate girder and a bridge, makes the shop details, and a set of working drawings. *Three laboratory credits per week, second term. Required of Seniors in Civil Engineering.*

IX. Masonry Construction.—This course deals with the materials of masonry, including brick, stone, lime, and cement; the theory of masonry structures, including foundations for buildings, bridges, and piers; the construction of retaining walls, culverts, bridge abutments; masonry dams and arches. The student is directed to important articles in the current literature of the subject,

and a systematic and thorough laboratory course on cement testing is given. *Two recitation and one laboratory credits per week, first term. Required of Seniors in Civil Engineering.*

X. Reinforced Concrete.—A study is made of the principles of mechanics underlying the design of reinforced concrete. Working stresses and economical proportions are considered, also the application of reinforced concrete construction to building construction, arches, retaining walls, dams, and miscellaneous structures. *Two recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XI. Sewerage.—A discussion of the separate and combined systems of sewers; relation of rainfall to storm-water flow; hydraulics of sewers; removal of house sewage; the design and construction of sewers and methods of sewage disposal. *Two recitation credits per week, first term. Required of Seniors in Civil Engineering.*

XII. Water Supply.—A discussion of the quantity of water required, sources of supply, flow of streams, and of ground water. Instruction is also given in the general arrangement of water works, loss of head in flow of water through pipes, stresses in dams and water towers. Works for the purification and distribution of water are discussed, including reservoirs, settling basins, pumping machinery, etc. *Three recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XIII. Tunneling.—A study of the methods of making tunnel surveys and of the modern methods employed in tunnel construction. *One recitation credit per week, second term. Required of Seniors in Civil Engineering.*

XIV. Contracts and Specifications.—A study of the fundamental principles of the law of contracts, and their application to engineering work. *Two recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XVI. Vacation Reading.—Systematic reading during vacations on some topic assigned by the head of this department.

XV. Thesis.—The preparation of a thesis on some subject connected with the work of this department, involving original investigation or experiment. *Required of Seniors in Civil Engineering.*

## Geology and Mineralogy.

DR. WHEELER, DR. LEIGHTON, MR. SMITH.

GEOLOGY.—Under this subject historical geology is considered in outline, attention being given, also, to those phases of dynamical and structural geology which are particularly important. Special attention is given to rock weathering and soil formation, and to those characteristics of rocks which are of chief importance in connection with road construction.

**DETERMINATIVE MINERALOGY.**—A short course dealing with the elements of crystallography is given, together with the physical and chemical characteristics of minerals, especially of the rock-making minerals composing our soils. Laboratory work in blowpipe analysis and physical determination of minerals follows the crystallography.

### Subjects.

I. Geology.—*Two recitation credits per week, second term. Required of Juniors in Civil Engineering.*

II. Mineralogy.—See Chemistry XI.

### History.

PRESIDENT EDWARDS, MR. SPENCER.

### Subjects.

I. Social, Economic, and Industrial History of the United States.—*Two recitation credits per week, first term; and three recitation credits per week, second term. Required of Juniors in all courses.*

II. Government and Politics in the United States.—*Five recitation credits per week, first term, last six weeks; and second term, first six weeks. Required of Seniors in all courses.*

### Languages.

PROFESSOR WATSON, MR. SPENCER, MISS MYRICK.

The subjects grouped under this head are English, German, and French.

In all the college courses leading to a degree, English is required throughout the first three years and during twelve weeks of the Senior year. Much practice is given in written and oral expression, and literature is also studied in representative masterpieces. Two years of foreign language work are required in all college courses leading to a degree except mechanical, electrical, and civil engineering, where the requirement is one year. Preference is given to German, but French will be taught if there is sufficient demand for it.

The library is a most important factor in the work of the department, as the English language and literature are represented in it by some twelve hundred carefully selected volumes, and the French and German literatures by about six hundred.

## ENGLISH.

I. Rhetoric.—Text-book study and practical application of rhetorical principles in written work. *One recitation credit per week, throughout the year. Required of Freshmen in all courses.*

II. Newspaper Work.—*One recitation credit per week, first term. Required of Sophomores in all courses.*

III. Argumentation.—A study of fundamental principles. Practice in brief-making and essay writing. *One recitation credit per week, second term. Required of Sophomores in all courses.*

IV. Modern English Prose.—*Two recitation credits per week, first term; and one recitation credit per week, second term. Required of Juniors in all courses.*

V. Modern English Poetry.—*Four recitation credits per week, second term, last twelve weeks. Required of Seniors in all courses.*

VI. Individual Work in Composition.—*From three to five recitation credits per week, first term; Freshman year. An option for entering students.*

A. Elementary English.—Grammar, dictation, composition, and reading of masterpieces. Constant practice in writing and oral expression. *Four recitation credits, throughout the year. Required of Short-Course students in Agriculture and Engineering, first year.*

B. Elementary English.—A continuation of A, including, also, some instruction in civics and economics. *Three recitation credits, throughout the year. Required of Short-Course students in Agriculture and Engineering, second year.*

## ORAL EXPRESSION.

I. Interpretive Reading.—The fundamentals of expression, pronunciation, articulation, the training of the voice. The intellectual element in expression: emphasis, inflection, phrasing—the reading of prose. The emotional element in expression; quality, force, pitch, rhythm—the reading of poetry. *One recitation credit per week, throughout the year. Required of all Freshmen.*

II. Dramatic Expression.—Standard plays will be studied in class and presented in public from time to time. *One recitation credit per week, throughout the year. Required of all Sophomores.*

III. Debating.—Instruction and practice in the art of debate. Two public debates will be given by the students. *One recitation credit per week, throughout the year. Required of all Juniors.*

IV. Oratory and Extempore Speaking.—Theory and practice. *One recitation credit per week, second term, last twelve weeks. Required of all Seniors.*

## GERMAN.

I. Elementary German.—Grammar, dictation, conversation, reading of easy prose and poetry. *Four recitation credits per week, throughout the year. Required of Freshmen who do not offer German for entrance.*



II. Reading of intermediate texts, composition, conversation, study of one of Schiller's masterpieces or similar work. *Three recitation credits per week, throughout the year. Required of Sophomores in Agriculture, Applied Science, Home Economics, and Chemical Engineering.*

III. Scientific and Classical German.—*Three recitation credits per week, throughout the year. Elective for students who have taken I and II or their equivalents.*

IV. Scientific German.—*From three to five recitation credits per week, first term; Freshman year. An option for entering students.*

#### FRENCH.

I. Elementary French.—Grammar, dictation, conversation, reading of easy prose and poetry. *Four recitation credits per week, throughout the year.*

II. Reading of intermediate texts, composition, conversation, selections from Hugo's *Les Misérables* or similar work. *Three recitation credits per week, throughout the year.*

III. Scientific and Classical French.—*Three recitation credits per week, throughout the year. Elective for students who have taken I and II or their equivalents.*

IV. Scientific French.—*From three to five recitation credits, first term; Freshman year. An option for entering students.*

## Mathematics.

PROFESSOR TYLER.

The work in this department covers two distinct phases of mathematical training: the college and the short-course instruction. Throughout the regular college work emphasis is laid both on the theory and direct application of the different subjects to the problems of engineering and agriculture. An attempt is made to present a working knowledge of arithmetic, algebra, geometry, and trigonometry and their practical use to Short-Course students.

### Subjects.

III b. Higher Algebra.—*Five recitation credits per week, nine weeks, first term. Required of all Freshmen.*

III c. Trigonometry.—*Five recitation credits per week, nine weeks, first term. Required of all Freshmen.*

IV b. Trigonometry completed and Analytics.—*Five recitation credits per week, second term. Required of Freshmen in Engineering and Applied Science.*

V a. Analytics completed and Calculus.—*Five recitation credits, throughout the year. Required of Sophomores in Engineering.*

VI a. University Algebra.—*Three recitation credits per week, first term. Elective for Freshmen.*

VI b. Practical Computations.—*Three recitation credits per week, second term. Elective for Freshmen.*

C. Arithmetic and Algebra.—*Five recitation credits per week, first term. Required of students in the Short Courses, first year.*

D. Algebra.—*Five recitation credits per week, second term. Required of students in the Short Courses, first year.*

F. Geometry, Mensuration, Trigonometry.—*Four recitation credits per week, throughout the year. Required in the Short Courses, second year.*

## Military Science and Tactics.

LIEUTENANT STAHL.

All male students are required to attend exercises in military instruction during their attendance at the college unless excused by reason of physical disability. Credit is given for this work on the same basis and under the same regulations as in other departments.

The war department furnishes for use in this instruction United States magazine rifles (Krag-Jorgensen pattern), swords, equipments, and ammunition for target practice. The cadets are organized this year into a battalion of two companies of infantry and band. Theoretical instruction is given by means of lectures and recitations, and practical instruction by means of infantry drills in the school of the squad, the company, and the battalion. The aim of these military exercises is to improve the physique, to inculcate the habit of prompt and cheerful obedience and courtesy to rightfully constituted authority, and to exercise an elevating influence on the conduct of the corps of cadets.

Competitive drills are held annually between the companies of the battalion. The name of the best drilled company and its commander is placed on the battalion colors. Company A, commanded by Cadet Captain R. W. Goodale, was the winner in the annual color contest held May 21, 1908. The winner of the prize medal in the individual competitive drill, June 16, 1908, was H. A. Tisdale, Second Sergeant, Company A.

The names of such students of the graduating class each year as have shown special aptitude for military service will be reported

to the adjutant-general of the army and also to the adjutant-general of the state.

### Subjects.

I. Practical Instruction.—Drills in the school of the squad, of the company, and of the battalion; target practice. *Two exercises of one hour each per week, counting as one credit, throughout the year. Required of all the command.*

II. Theoretical Instruction.—United States Infantry Drill Regulations. Small Arms Firing Regulations. Manual of Guard Duty. Field Service Regulations of United States Army. *One recitation credit per week, throughout the year. Required of all Freshmen.*

## BATTALION ORGANIZATION, APRIL, 1909.

### COMMANDANT,

HENRY G. STAHL, First Lieutenant, 6th U. S. Infantry.

### CADET OFFICERS AND NON-COMMISSIONED OFFICERS.

#### *Battalion.*

Major.....	E. R. BUTTS.
Adjutant.....	L. SLACK.
Quartermaster.....	D. E. WARNER.
Sergeant-Major.....	A. J. MINOR.
Color Sergeant.....	C. B. EDWARDS.
Quartermaster Sergeant.....	C. R. WADE.

#### *Company A.*

Captain.....	R. W. GOODALE.
First Lieutenant.....	G. J. SCHAEFFER.
Second Lieutenant.....	A. F. WAGNER.
First Sergeant.....	L. L. MOUNCE.
Sergeant.....	B. K. HARRIS.
Sergeant.....	L. C. EASTERBROOKS.
Sergeant.....	H. SOUTHARD.
Sergeant.....	E. A. COMBER.
Corporal.....	I. C. MITCHELL.
Corporal.....	R. H. HAZARD.
Corporal.....	H. A. EASTERBROOKS.
Corporal.....	W. H. TULLY.

#### *Company B.*

Captain.....	P. S. BURGESS.
First Lieutenant.....	S. QUINN.
Second Lieutenant.....	A. H. KENYON.
First Sergeant.....	R. H. CARPENTER.

Sergeant.....	H. J. SMITH.
Sergeant.....	W. G. TAYLOR.
Sergeant.....	R. W. CUMMINGS.
Sergeant.....	D. E. WORRALL.
Corporal.....	W. HENRY.
Corporal.....	W. W. DANIELS.
Corporal.....	W. J. WHALEN.
Corporal.....	J. I. HARDY.

*Band.*

Chief Musician.....	W. C. RIETZEL.
Principal Musician.....	H. B. ALBRO.
Drum Major.....	W. T. NEAL.
Sergeant.....	C. W. RIETZEL.
Corporal.....	C. B. SISSON.

**Physics.**

PROFESSOR TOLMAN, MR. J. A. FOTTLER.

The instruction given in this department is intended to acquaint the students with the fundamental concepts of physical science. The work will be as broad as is consistent with the time and needs of the students.

This department is equipped with vernier and micrometer calipers, micrometer microscopes, comparator, dividing engine, cathetometer, simple and compound pendulums and balances for exact measurements in mechanics. It has also apparatus for determining the coefficient of linear expansion, and for the determination of specific and latent heats, a weight thermometer apparatus for determining the density of liquids and solids, a thermo-couple for direct determination of temperatures up to 1650° C., Melloni's apparatus for investigation in radiant heat, and apparatus for determining the mechanical equivalent of heat.

In light the laboratory is equipped to carry on the usual college work, and so has apparatus for finding the focal length of lenses and mirrors: a Pulfrich refractometer, spectrometers, an interferometer (Institute of Technology patterns), photometer, total reflectometer, and many smaller instruments, including simple and compound microscopes. The greater part of the above listed apparatus is new, having been recently purchased of foreign makers.

The laboratory for exact measurements in electricity and magnetism is also fitted up with new apparatus recently purchased of the

Leeds and Northrup Company of Philadelphia, and among other instruments are several types of D'Arsonval galvanometers; Wheatstone bridges, slide wire and post-office patterns; standard cells (Clark and Weston types); standards of resistance, capacity and self-induction; magnetometers; voltmeters; and many smaller instruments sufficient to carry out the usual college work in electrical measurements. For advanced electrical measurements the department is provided with Weston and Thompson ammeters, and voltmeters with both low and high ranges, wattmeters, a Leeds and Northrup alternating and direct current comparator.

In the subject of sound the department is provided with apparatus for the determination of wave-length, pitch, frequency, etc.

### Subjects.

I. Descriptive Physics.—A course designed for students in Agriculture. Considerable time is given to the discussion of the principles of mechanics as applied to farm machinery. The course furnishes an excellent foundation for further work in agricultural physics. *Five recitation credits per week, second term. Required of Sophomores in Agriculture.*

II. General Physics.—A mathematical treatment of the subject. *Four recitation credits per week, throughout the year. Required of all Sophomores in Engineering and Teachers' Course in Applied Science.*

III. Laboratory Physics.—A course in physical measurements intended to teach students methods and to form a basis for future engineering work. The calculation of results will be given special attention. *One and one-half laboratory credits per week, throughout the year. Required of Sophomores in Engineering and Teachers' Course in Applied Science.*

IV. Electrical Measurements.—A course of lectures treating of the theory and manipulation of electrical measuring instruments. *Three recitation credits per week for nine weeks, first term. Required of Juniors in Electrical Engineering.*

V. Electrical Measurements Laboratory.—Direct currents measurements, resistance, potential, current, magnetic properties of iron and steel, calibration of direct current instruments. *One and one-half laboratory credits per week for sixteen weeks, first term. Required of Juniors in Electrical Engineering.*

VI. Photometric Measurements.—A study of the candle power of different forms of arc, incandescent, and mercury-vapor lamps. *One and one-half laboratory credits for two weeks, first term. Required of Juniors in Electrical Engineering.*

VII. Electrical Measurements Laboratory.—Alternating currents measurements, self-induction, mutual-induction, capacity. Calibration of alternating current instruments. *Three laboratory credits for six weeks, first term. Required of Seniors in Electrical Engineering.*



A. Elementary Physics.—A descriptive course covering the subjects, mechanics of liquids and gases. *Three recitation and one laboratory credits per week, throughout the year. Required of Short-Course students in Engineering, second year.*

## Psychology.

PRESIDENT EDWARDS.

I. Lectures, recitations, simple laboratory experiments.—*Three recitation credits per week, first term. Required of Juniors in Applied Science and Home Economics.*

## Woodwork.

MR. T. C. RODMAN.

H. Farm Buildings.—A practical course in the planning of farm structures, estimating quantities of material required, and costs. *One shop credit per week, first term. Required of Short-Course students in Agriculture, first year.*

'I. 'Shopwork.—Woodworking at the bench and lathe. *One and one-half shop credits per week, first term. Required of Short-Course students in Agriculture, first year.*

## Zoölogy.

PROFESSOR BARLOW.

The work in this department is designed to meet the needs of two classes of students, those who are interested in the economic aspect of animal life and those who purpose to become teachers. To meet the needs of the first class, subjects are given which are planned to call attention to the economic importance of the different orders. Much time is allotted to entomology, and in this subject special attention is given to injurious species. For those who are to be teachers, a thorough training is given in the morphology and classification of animals as a preparation for the more special subjects that follow. In these attention is directed to the habits and relations of animals, which are studied both in the field and laboratory.

The laboratory is equipped with a series of charts, valuable models, and many mounted skeletons. The Rhode Island birds are represented by mounted specimens of practically every species; fishes, reptiles, and batrachians, by alcoholic preparations. The collection of insects, begun recently, now fills about eighty cases, and is being



LADD LABORATORY—SKELETON ROOM.



THE BIOLOGICAL LABORATORY.



steadily increased. Each student is given the use of compound and dissecting microscopes and necessary instruments for laboratory work.

### Subjects.

I. General Zoölogy.—Discussion of the more important laws of Biology and the dissection of representatives of the more important Phyla. *Two laboratory and one recitation credits, first term. Required of Sophomores in Agriculture, Home Economics, and Applied Science.*

II. General Zoölogy (continued).—Special attention is given to the relation of animals to their surroundings. *Two laboratory and one recitation credits, second term. Required of Sophomores in Applied Science.*

III. Physiology.—The physiology of the higher mammals. *One laboratory and three recitation credits per week, second term. Required of Sophomores in Agriculture and Home Economics.*

IV. Economic Entomology.—*One laboratory and three recitation credits per week, second term. Required of Juniors in Agriculture.*

V. General Entomology.—*Two laboratory and two recitation credits per week, throughout the year. Elective.*

VI. Systematic Entomology.—*Three laboratory credits per week, throughout the year. Elective for those who are taking or have taken Zoölogy V.*

VII. Vertebrate Anatomy.—*Two laboratory and one recitation credits per week, first term. Required of Juniors in Home Economics.*

VIII. Histology and Embryology.—*Two laboratory and one recitation credits per week, second term. Required of Juniors in Home Economics.*

IX. Methods in Nature Study.—Bird life, habits of insects, aquaria. *Two laboratory or field credits and one recitation credit per week, second term. Required of Sophomores in the Teachers' Course in Applied Science.*

A. Elementary Zoölogy.—Deals with forms of economic importance. *Two recitation and two and one-half laboratory credits per week, first term. Required of Short-Course students in Agriculture, first year.*

## Organizations.

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### Athletic Association.

LEROY LEIDMAN MOUNCE.....	President.
GEORGE JOSEPH SCHAEFFER.....	Vice-President.
JOHN BARLOW.....	Secretary-Treasurer.

### Agricultural Club.\*

JOHN LELAND SHERMAN.....	President.
GEORGE JOSEPH SCHAEFFER.....	Vice-President.
HOWARD ALBERT SAFFORD.....	Secretary-Treasurer.

### Engineering Society.

WARREN HENRY.....	President.
GEORGE ABBOTT PEABODY.....	Vice-President.
HARRY BENJAMIN ALBRO.....	Secretary-Treasurer.

### Science Club.

F. R. PEMBER.....	Secretary.
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### Young Men's Christian Association.

HARRY ROBERT TISDALE.....	President.
OLIVER MURRAY DRUMMOND.....	Vice-President.
JOHN IRA HARDY.....	Secretary.
GEORGE ABBOTT PEABODY.....	Treasurer.

### Young Women's Christian Union.

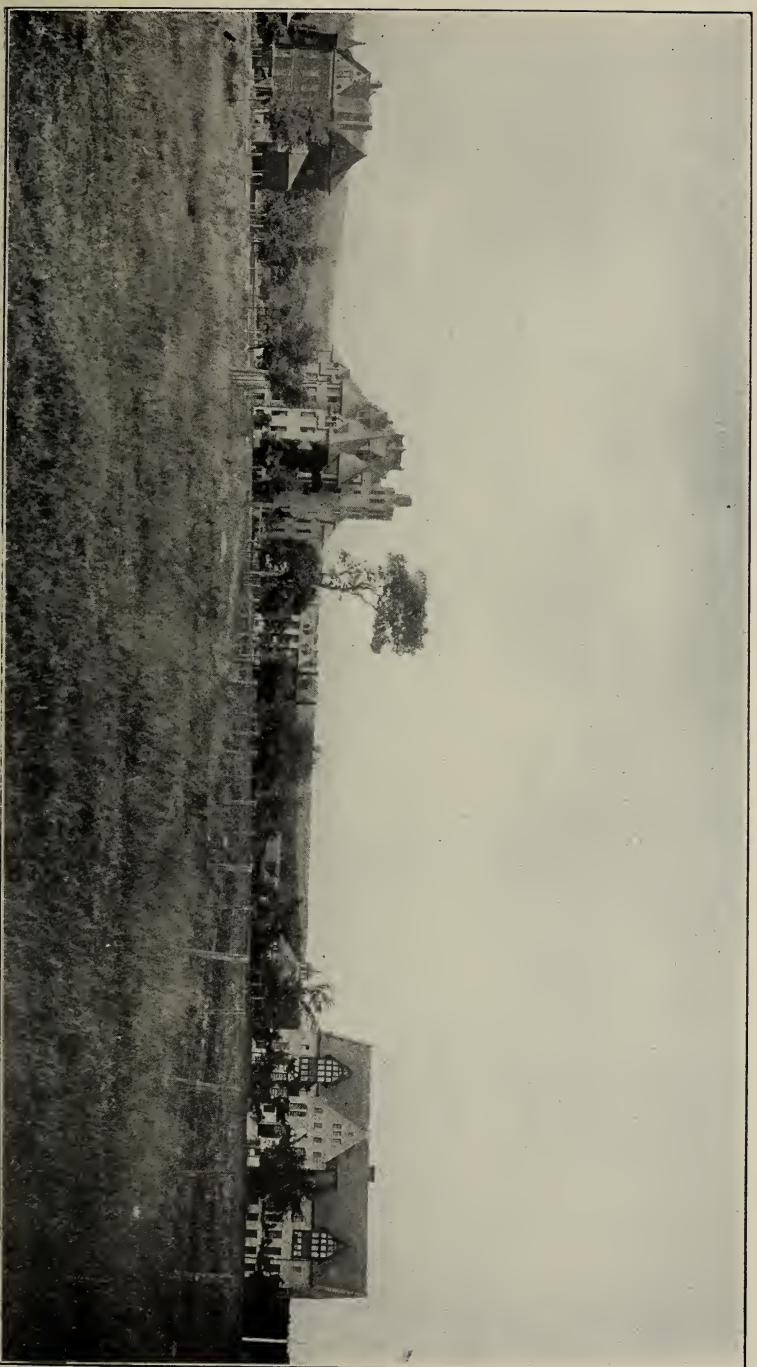
RHOBIE LUCELIA CARGILL.....	President.
ANNIE ELIZA KENYON.....	Vice-President.
BERTHA MAY HEATH.....	Secretary.
SUSIE STANTON WOOD.....	Treasurer.

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\*Affiliated with the New-England Federation of Agriculturists.



FROM THE VILLAGE ROAD,





## Alumni Association.

ARTHUR EARLE MUNROE, 1900.....President.

Providence, R. I.

CLOVIS WILLIAM MITCHELL, 1908.....Vice-President.

New London, Conn.

WARREN BROWN MADISON, 1894\*.....Secretary-Treasurer.

Kingston, R. I.

### *Executive Committee.*

A. E. MUNRO, 1900,

W. B. MADISON, 1894,\*

C. W. MITCHELL, 1908,

H. R. LEWIS, 1907,

L. L. HARDING, 1906.

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\*Deceased.

## Students.

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### Graduates.

Bosworth, Alfred Willson, B. S. ('99), Chemistry and Botany, Geneva, New York.	
*Crandall, Daniel Alva (Alfred University) . . . . .	Rockville.
Irish, J. Swett, B. S. (Univ. of Me., '08), Bacteriology and Zoölogy . . . . .	Kingston.
*Keefer, Edith Cecilia, B. S. ('03) . . . . .	Kingston.
Whiting, Albert Lemuel, B. S. (Mass. Agr. College, '08), Agronomy and Botany . . . . .	Kingston.

### Seniors.

Cargill, Rhobie Lucelia, Gen. Sci. . . . .	Abbott Run.
Craig, James McIntyre, Agr. . . . .	Riverpoint.
Crandall, Fred Kenyon, Agr. . . . .	Westerly.
French, Henry Frank, El. Eng. . . . .	Providence.
Howe, Albert Mendel, El. Eng. . . . .	Brockton, Mass.
Knowles, Walter, Civ. Eng. . . . .	Kingston.
Lee, Alfred Rogers, Agr. . . . .	Greenwood, Mass.
Moran, Walter John, Civ. Eng. . . . .	New London, Conn.
Moyer, Louis Earl, Civ. Eng. . . . .	Dexter, N. Y.
Rockwell, Ruby Belle, Chem. . . . .	Troy, Pa.
Smith, Elmer Francis, El. Eng. . . . .	East Lyme, Conn.
Tisdale, Harry Robert, Chem. . . . .	New London, Conn.
Tucker, Ellen Capron, Gen. Sci. . . . .	Kingston.

### Juniors.

Burgess, Paul Steere, Chem. Eng. . . . .	Pawtucket.
Carpenter, Randolph Haywood, El. Eng. . . . .	East Providence.
Cummings, Robert Winthrop, Mech. Eng. . . . .	Orange, Mass.
Easterbrooks, Harold Arnold, App. Sci. . . . .	Providence.
Goodale, Ralph Waldo, Civ. Eng. . . . .	Leominster, Mass.
Hardy, John Ira, Chem. Eng. . . . .	Groveland, Mass.
Heath, Bertha May, Agr. . . . .	Lunenburg, Mass.
Henry, Warren, Civ. Eng. . . . .	Hopedale, Mass.
Kenyon, Amos Harris, El. Eng. . . . .	Usquepaug.
Lamond, Helen Scott, Gen. Sci. . . . .	Usquepaug.
Mounce, Leroy Leidman, Agr. . . . .	North Marshfield, Mass.
Peabody, George Abbott, El. Eng. . . . .	Middleton, Mass.
Sherman, John Leland, Agr. . . . .	Providence.

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\* Undergraduate work in agriculture.

Slack, Lewis, Civ. Eng.	Kingston.
Smith, Hiram Jameson, Civ. Eng.	Woonsocket.
Taylor, Walter Gray, El. Eng.	Middletown.
Tucker, Harriet Faber, Gen. Sci.	West Kingston.
Wagner, Albert Frederic, El. Eng.	Berkeley.
Wheeler, Richard Howes, El. Eng.	New London, N. H.
Worrall, David Elbridge, Chem. Eng.	Woonsocket.

### Sophomores.

Albro, Harry Benjamin, El. Eng.	Pontiac.
Andrews, Carmen Nichols, App. Sci.	Slocums.
Angilly, Charles Enoch, Jr., Civ. Eng.	Providence.
Butts, Eberhard Raynor, El. Eng.	East Greenwich.
Caldwell, Dorothy Walcott, Civ. Eng.	Woonsocket.
Comber, Edward Anthony, El. Eng.	Narragansett Pier.
Davis, Edgar George	Providence.
Easterbrooks, Louis Church, Agr.	Providence.
Falk, Gustav Adolf, El. Eng.	East Greenwich.
Gilchrest, Clyde Ronald, El. Eng.	Leominster, Mass.
Hahn, Byron George, El. Eng.	Thomaston, Maine.
Harris, Burton Kenneth, Chem. Eng.	Lime Rock.
Hazard, Ralph Marshall, Civ. Eng.	Newport.
Healy, Patrick Joseph, Agr.	Newport.
Kent, Robert Willard, Mech. Eng.	Woonsocket.
Kenyon, Annie Eliza, App. Sci.	Usquepaug.
Leonard, Charles Augustus, El. Eng.	Hingham, Mass.
MacMillan, Walter Bruce, El. Eng.	Pawtucket.
Madison, Thomas Edwin, El. Eng.	East Greenwich.
Minor, Arthur Jacob, Civ. Eng.	Kingston.
Mitchell, Irving Calvary, Civ. Eng.	Harrisville.
Mowry, William Wheatley, El. Eng.	Woonsocket.
Quinn, Stephen, El. Eng.	Wakefield.
Robinson, Benjamin Rowland, Mech. Eng.	Bedford Station, N. Y.
Ruprecht, Rudolf William, Chem. Eng.	New York City, N. Y.
Safford, Howard Albert, Agr.	Providence.
Schaeffer, George Joseph, Agr.	Narragansett Pier.
Soule, Henry Eli, Mech. Eng.	Wickford.
Wade, Ceylon Raymond, Civ. Eng.	Bridgeton.
Warner, David Edmond, Jr., Agr.	Bridgeton.
Whalen, William Joseph, Civ. Eng.	Providence.
Wheeler, Ellery Harrison, El. Eng.	Valley Falls.

### Freshmen.

Barlow, Henry Newell, Civ. Eng.	Wassaic, N. Y.
Beale, Allan Souther, Eng.	Mapleville.
Bigelow, Carle Muzzy, Chem. Eng.	Woonsocket.



Butterworth, Frank Bullock, Mech. Eng.	Somerset, Mass.
Caldwell, Seth Atherton, Mech. Eng.	Woonsocket.
Clark, Philip Harrison, El. Eng.	Centreville.
Colb, Electra Henrietta, Home Econ.	Howardsville, Va.
Comstock, Jonathan Farnum, Agr.	Cranston.
Congdon, Esther Loomis, Home Econ.	Wakefield.
Daniels, Willis Washington, Civ. Eng.	Pawtucket.
Doll, Walter, Civ. Eng.	Berkeley.
Eleazarian, Aram, El. Eng.	Teheran, Persia.
Fagan, Hugh Jean, Civ. Eng.	Peacedale.
Gammino, Thomas Anthony, Civ. Eng.	Providence.
Gilman, M. Elvin, Agr.	Gilman, Maine.
Gould, Alice Varney, Home Econ.	Milo, Maine.
Hindle, Clifford Dean, Chem. Eng.	Central Falls.
Johnson, Charles Varnum, Civ. Eng.	Allenton.
Larkin, Charles Herbert, Civ. Eng.	Ashaway.
Mounce, Harry Lyden, El. Eng.	North Marshfield, Mass.
Neal, William Thomas, Agr.	Pittsfield, Mass.
Nugent, James Francis, Civ. Eng.	Providence.
Nutting, Bertha May, Home Econ.	Brickerville, Pa.
Patterson, Arthur John, El. Eng.	Buffalo, N. Y.
Peckham, Harold Caldwell, Mech. Eng.	Bristol.
Pickering, Earl Vivian, Civ. Eng.	Blackstone, Mass.
Randall, William Olney	Providence.
Richmond, Fred Allen, El. Eng.	Hope Valley.
Robinson, Eben George, Agr.	Edgewood.
Sherman, George William, El. Eng.	Lafayette.
Spaulding, Helen Constance, Home Econ.	Hudson, N. H.
Steck, Frank, Civ. Eng.	Newark, N. J.
Steere, Charles Arnold, Agr.	Greenville.
Sullivan, John Leo, El. Eng.	Lonsdale.
Torr, John Malcolm, Eng.	Providence.
Tyler, Earl Albert, Chem. Eng.	Centreville.
White, Thomas Bush, Mech. Eng.	Amesbury, Mass.
Wood, Harvey Nichol, El. Eng.	Plymouth, Mass.

### Specials.

Browning, Alice Pearl	Wakefield.
Cooper, Gertrude M.	Kansas City, Mo.
Cooper, Nellie Arvazena	Kingston.
Dautun, Alphonse Perron, Agr.	North Hackensack, N. J.
Edwards, Clarence Bland, Agr.	Kingston.
Fletcher, Edward Grove	Providence.
Kimball, Rhoda Evelyn, Agr.	South Dartmouth, Mass.
MacNiff, David John Shields	Providence.
Meears, Etta Elizabeth	Kingston.
Pettengill, George Herbert	Amherst, N. H.

Pratt, Stuart Greene, Agr.	Providence.
Sisson, Colville Brown, Agr.	Providence.
Slater, Allae Cordelia, Home Econ.	Providence.
Twe, Didhwo, Agr.	Liberia, Africa.
Worth, Harry Venal, Agr.	Newton, Mass.

### Sub-Freshmen.

Ahrens, Bernard Alexander	Elmhurst, Long Island, N. Y.
Arnold, Clifford Danforth	Harrisville.
Burdick, George Chester	Niantic.
Croft, Frank Emerson	Plymouth, Mass.
Dean, Harold Andrew	Westerly.
Dyer, Lola Segar	Slocums.
Hadley, Chester Brown	Woonsocket.
Hart, Crawford Peckham	Middletown.
Herreshoff, Lewis Francis	Bristol.
Hopkins, Raymond Canfield	Shannock.
Hoxsie, David Kenyon	Canonchet.
Johnson, Frederick Isaiah	Barrington.
Knight, Eva Anna	Slocums.
Lagacy, Joseph Francis	Bridgeton.
Lambert, Leroy Leigh	Apponaug.
MacKenzie, William	Westerly.
Matthews, Wilfred Chipman	Providence.
Pollock, Grace Mabel	Wakefield.
Purington, Elbert Thomas	Providence.
Rietzel, William Charles	Charlestown.
Rouse, Clifford Augustus	Shannock.
Schryver, Albert Robins	Jericho, Long Island, N. Y.
Southard, Horace	Providence.
Thornley, Albert Lewis	Pawtucket.
Wilson, Sara Iola	Westerly.
Wood, John Midgley	Pawtucket.
Wood, Susie Stanton	Slocums.
Young, James Hannibal	Brooklyn, N. Y.

### Short Course in Agriculture.

Aizpuru, Frank	Panama, Panama.
Barker, Stephen Congdon	Middletown.
Barrayarza, Fernando	Yaguajay, Cuba.
Brown, Herman Byron	Hope Valley.
Carbone, Umberto	Panama, Panama.
Caspersen, Bjarne	Dorchester, Mass.
Goddard, Archie Coggeshall	Newport.
Leonard, James Basil	Hingham, Mass.
Wilkins, Joseph Chapman	North Easton, Mass.

### Short Course in Engineering.

Arnold, Clifton Rice	Cowesett.
Berrayarza, Mario	Yaguajay, Cuba.
Hayward, Harry Lewis	Holyoke, Mass.
Hoxsie, Harry Bailey	Quonochontaug.
Hulse, Frank Halsey	Cowesett.
Miller, John Wright	Narragansett Pier.
Rayhill, Charles William	Warwick.
Rietzel, Charles Wheelock	Charlestown.
Toolin, Bartholomew James	Cowesett.
Tully, William Henry	Peacedale.
Wilson, Edward Lewis	East Greenwich.

### Course in Poultry Keeping.

Blanchard, Albert	Westerly.
Berrayarza, Fernando	Yaguajay, Cuba.
Caspersen, Bjarne	Dorchester, Mass.
Childs, Chesman Oliver	North Sutton, N. H.
Dautun, Alphonse Perron	North Hackensack, N. J.
Goddard, Archie Coggeshall	Newport.
Gonzales, Carl	Kingston.
Grise, Lionel Ambrose	Ware, Mass.
Johnson, Bernard	Roxbury, Mass.
Kent, Melville M.	East Boston, Mass.
Leonard, James Basil	Hingham, Mass.
Price, Edwin Doke	New York, N. Y.
Schutzbank, Israel	Freehold, New Jersey.
Seabury, LeRoy	Newport.
Tuller, Ernest J.	Hartford, Conn.
Wilkins, Joseph Chapman	North Easton, Mass.
Wheelock, George Walker	East Greenwich.
Withers, John Thomas	Jersey City, N. J.
Young, Edwin R.	Providence.

Total number of students (none counted twice) . . . . . 183

## Graduates.\*

1894.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ADAMS, GEORGE EDWARD Kingston.	Agr.	Chief of Dept. of Agriculture and Professor of Agronomy, R.I.S.C.
AMMONDS, GEORGE CLARENCE 5 Boylston Place, Boston, Mass.	Mech.	Railroad Postal Clerk, on N. Y., N. H. & H. R. R. Co.
ARNOLD, CHAPIN TRAFFORD 52 Wood St., Providence.	Agr.	Electrical Contractor, Office 26 Custom House St., Providence.
BURLINGAME, GEO. WASHINGTON R. F. D. No. 2, Box 56, North Scituate.	Agr.	Farmer.
CLARK, HELEN MAY (MRS. WM. F. B. LEAVITT), B. L., Smith College, 1899. Essex Fells, New Jersey.		At home.
KNOWLES, JOHN FRANKLIN Kingston.	Mech.	With Contractor John Bristow, Ashaway.
†MADISON, WARREN BROWN Kingston.	Agr.	Professor of Animal Husbandry, R. I. S. C.
MATHEWSON, ERNEST HOXSIE Ph. B., Brown University, 1896. 1486 Meridian Place, Washington, D. C.	Mech.	Crop Technologist in Tobacco, U. S. Department of Agriculture.
PECKHAM, REUBEN WALLACE Melville Station, Newport.	Agr.	Market Gardener.
RATHBUN, WILLIAM SHERMAN Barnet, Vt.	Agr.	Editor Barnet Record.
RODMAN, GEORGE ALBERT New Haven, Conn.	Mech.	Building Dept., Room 24, Union Station, N. Y., N. H. & H. R. R. Co.
SARGENT, CHARLES LAWRENCE Ph D., University of Pennsylvania, 1900. 9 Thomas St., Newark, New Jersey.	Agr.	Chemist, Murphy Varnish Co.
SLOCUM, SAMUEL WATSON 130 West Broad St., Westerly.	Agr.	Carpenter.

\*It is earnestly desired that the graduates inform the Alumni Bureau of any permanent change of address.

†Died March 22, 1909.

NAME AND ADDRESS.	COURSE.	OCCUPATION
SPEARS, JOHN BARDEN . . . . Foster Centre.	Agr.	Farmer.
SWEET, STEPHEN ADELBERT . . . Slocums.	Agr.	Farmer.
TUCKER, GEORGE MASON . . . . Ph. D., Göttingen, 1899. Louisville, Illinois.	Agr.	Farmer.
WILBER, ROBERT ARTHUR . . . . East Greenwich.	Mech.	Express Agent.

## 1895.

ALBRO, LESTER FRANKLIN . . . . Melville Station, Newport.	Agr.	Professional Singer.
BURDICK, HOWLAND . . . . . Kingston.	Agr.	Instructor in Dairying, R. I. S. C.
CLARKE, CHARLES SHERMAN . . . Jamestown.	Mech.	Marine Engineer.
ELDRED, MABEL DEWITT . . . . Kingston.		Instructor in Drawing, R. I. S. C.
HAMMOND, JOHN EDWARD . . . . Jamestown.	Agr.	Farmer.
OATLEY, LINCOLN NATHAN . . . . Wakefield.	Mech.	Contractor and Builder.
SCOTT, ARTHUR CURTIS . . . . . Ph. D., Univ. of Wisconsin, 1902. Austin, Texas.	Mech.	Professor of Electrical Engineer- ing, Consulting Engineer, Univ. of Texas.
TEFFT, JESSE COTTRELL . . . . Jamestown.	Mech.	Purser, Newport and Jamestown Ferryboat Co.
WINSOR, BYRON EDGAR . . . . . Coventry.	Mech.	Poultryman.

## 1896.

BROWN, MAY (MRS. CHARLES A. WHITE), Narragansett Pier.		At home.
GREENMAN, ADELAIDE MARIA (MRS. R. WALLACE PECKHAM) . . Melville Station, Newport.		At home.
KENYON, ALBERT LEWIS . . . . . 35 Chestnut St., South Manchester, Conn.	Mech.	Farmer.
MOORE, NATHAN LEWIS CASS . . . Shannock.	Agr.	Fruit-Grower.
TABOR, EDGAR FRANCIS . . . . . 69 Doyle Ave., Providence.	Mech.	Calico Printer, U. S. Finishing Co., Silver Spring Branch.
*WILLIAMS, JAMES EMERSON . . . .	Agr.	



## 1897.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CARMICHAEL, WELCOME SANDS . . . Shannock.	Sci.	Bookkeeper, Providence Journal Co., Providence.
CASE, HERBERT EDWARDS BROWN . Ph. B., Brown University, 1900. Graduate, Hartford Theological Seminary, 1904.	Mech.	Missionary, Marianas, Island of Guam, U. S. A.
GRINNELL, ARCHIE FRANKLIN . . . 85 Ninth St., Providence.	Mech.	Draughtsman, Brown & Sharpe Mfg. Co.
HANSON, GERTRUDE MAIE . . . Usquepaug.	Sci.	Teacher.
HOXSIE, BESSIE BAILEY (MRS. E. F. RUECKERT) . . . 98 Melrose St., Providence.	Sci.	At home.
KENYON, ALBERT PRENTICE . . . 10 West St., Westerly.	Mech.	Bookkeeper, Maxson & Co., West- erly.
KENYON, CHARLES FRANKLIN . . . Shannock.	Mech.	Stationary Engineer, Boston, Mass.
LARKIN, JESSIE LOUISE . . . 98 Beach St., Westerly.	Sci.	Genealogist.
MARSLAND, LOUIS HERBERT . . . 115 Mark Ave., Syracuse, N. Y.	Mech.	Asst. Engineer, with Syracuse Railroad Construction Co., 500 Onondaga County Savings Bank Bldg.
TEFFT, ELIZA ALICE . . . 16 Rocket St., Westerly.	Sci.	Teacher, East Greenwich.
THOMAS, IRVING . . . 2217 South Darien St., Philadel- phia, Pa.	Mech.	Designer of Patterns.

## 1898.

ARNOLD, SARAH ESTELLE (MRS. R. O. BROOKS) . . . 191 Franklin St., New York City.	Sci.	At home.
BARBER, GEORGE WASHINGTON . . . East Greenwich.	Agr.	Clerk.
CARGILL, EDNA MARIA (MRS. LESTER H. BROWN) . . . Abbott Run.	Sci.	At home.
CASE, JOHN PETER . . . 26 Courtland St., New York City.	Agr.	With Brown Hoisting Machinery Company.
CLARK, WILLIAM CASE . . . Wakefield.	Sci.	Secretary and Gen. Mgr. Sea- View Railroad Co. and Narra- gansett Pier Elec. Light and Power Co.; Mgr. Wickford Light and Water Co.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CONGDON, HENRY AUGUSTUS Kingston.	Mech.	Farmer.
FLAGG, MARTHA REBECCA Hardwick, Mass.	Sci.	At home.
HARLEY, WILLIAM FERGUSON 62 Hillside Ave., Providence.	Agr.	Salesman, with Messrs. Callender, McAuslan & Troup, Providence.
TURNER, HARRIETTE FLORENCE (MRS. GEO. M. TUCKER) Graduate, Drexel Institute, 1900, Louisville, Illinois.	Sci.	At home.
WILSON, GRACE ELLEN (MRS. W. F. HARLEY) 62 Hillside Ave., Providence.	Sci.	At home.

## 1899.

BOSWORTH, ALFRED WILLSON Geneva, N. Y.	Sci.	Associate Chemist, N. Y. Agr. Exp. Sta.
BROOKS, RALPH ORDWAY 191 Franklin St., New York City.	Sci.	Consulting Chemist, Bacteriologist, Microscopist, Food-Inspection Expert.
GEORGE, LILLIAN MABELLE A. B., Univ. Ill., 1904. Kingston.	Sci.	Librarian, R. I. S. C.
HARVEY, MILDRED WAYNE 27 West 93d St., New York City.	Sci.	Private Secretary, National Copper Bank.
KENYON, BLYDON ELLERY Austin, Texas.	Agr.	Instructor, School of Electrical Engineering, Univ. of Texas.
KNOWLES, CARROLL 127 Hamilton St., Providence.	Mech.	Tool Designer, Brown & Sharpe Mfg. Co.
KNOWLES, HARRY Ph. B., Brown University, 1906. 37 East Park St., Newark, N. J.	Sci.	Reporter, Newark Sunday Call.
LADD, MERRILL AUGUSTUS 304 No. Boulevard, Atlanta, Ga.	Mech.	Commercial Representative for Florida and Georgia, General Electric Co.
MORRISON, CLIFFORD BREWSTER 543 Broad St., Providence.	Sci.	Chemist, City Sewerage Dept.
OWEN, WILLIAM FRAZIER Schenectady, N. Y.	Mech.	Engineering Dept., General Electric Co.
PAYNE, EBENEZER M. D., Univ. Michigan, 1904. Great Barrington, Mass.	Sci.	Physician and Surgeon.
PHILLIPS, WALTER CLARKE Ph. B., Brown University, 1902. A. M., Brown University, 1903. 1104 W. Illinois St., Urbana, Ill.	Mech.	Instructor in English Literature, University of Illinois.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
REYNOLDS, ROBERT SPINK . . . Room 314, Gen. Office Bldg., New Haven, Conn.	Mech.	Chief Draughtsman, Bridge Dept., N. Y., N. H. & H. R. R. Co.
RICE, MINNIE ELIZABETH (MRS. ROBERT J. SHERMAN) . . . Lafayette.	Sci.	At home.
SHERMAN, ABBIE GERTRUDE (MRS. BENJAMIN BARTON) . . . 56 Pavilion Ave., Providence.	Sci.	At home.
SHERMAN, GEORGE ALBERT . . . West Kingston.	Mech.	Insurance Agent.
THOMPSON, SALLY RODMAN (MRS. LEWIS BALCH, JR.) . . . Wakefield.	Sci.	At home.

## 1900.

BRIGHTMAN, HENRY MAXSON . . . 526 Murray Bldg., Grand Rapids, Mich.	Mech.	Consulting Engineer.
CROSS, CHARLES CLARK . . . . 814 So. 19th St., Newcastle, Ind.	Mech.	Chief Inspector, Maxwell-Briscoe Motor Co.
ELDRED, JOHN RALEIGH . . . . Kingston.	Mech.	Instructor in Mechanical Engineer- ing, R. I. S. C.
FISON, GERTRUDE SARAH . . . . 782 Lincoln Place, Brooklyn, N. Y.	Sci.	Children's Librarian, Brooklyn Public Library, Albany Heights Branch, Brooklyn.
FRY, JOHN JOSEPH . . . . . A. B., Oberlin, 1904. Glenbrook, Conn.	Mech.	
GODDARD, EDITH (MRS. LAWRENCE B. REED) . . . . 10 North St., Plymouth, Mass.	Sci.	At home.
KENYON, AMOS LANGWORTHY . . . Newburgh, N. Y.	Agr.	Dairyman, Brookside Farm.
MUNRO, ARTHUR EARLE . . . . . Ph. B., Brown University, 1902. 41 George St., Providence.	Sci.	Attorney-at-Law, 49 Westminster St.
SOULE, RALPH NELSON . . . . . East Greenwich.	Sci.	
STEERE, ANTHONY ENOCH . . . . Fort Hunter, N. Y.	Mech.	Assistant Civil Engineer, New York State Barge Canal.
STILLMAN, LENORA ESTELLE . . . 1229 Gates Ave., Brooklyn, N. Y.	Sci.	Teacher.
TUCKER, BERTHA DOUGLASS . . . R. F. D. No. 2, Box 105, Swansea, Mass.	Sci.	Dressmaker

NAME AND ADDRESS.	COURSE.	OCCUPATION.
WHEELER, CHARLES NOYES 97 Garden St., Pawtucket.	Sci.	Clerk, Wm. H. Haskell Manufacturing Co.
WILSON, JOSEPH ROBERT Belleville.	Mech.	In Woolen Mills, J. P. Campbell.

## 1901.

BRAYTON, CHARLES ANDREW Fiskeville.	Agr.	Farmer.
BRIGGS, NELLIE ALBERTINE Providence.	Sci.	Stenographer, R. I. Hospital Trust Co.
BURGESS, CHARLES STUART 264 Sayles St., Providence.	Mech.	Draughtsman, Brown & Sharpe Mfg. Co.
CLARNER, LOUIS GEORGE KARL, JR. Arnold's Mills.	Sci.	Farmer.
DAWLEY, EDNA ETHEL Kenyon.	Sci.	Traveling for F. E. Compton & Co.
DENICO, ARTHUR ALBERTUS 15 Dey St., New York City.	Sci.	With American Telephone and Telegraph Co., Traffic Dept.
*JAMES, RUTH HORTENSE (Mrs. HERBERT E. ROUSE)	Sci.	
SHERMAN, ANNA BROWN Kingston.	Sci.	Advertising.
SHERMAN, ELIZABETH AGNES 41 Milk St., Boston, Mass.	Sci.	Stenographer, with Whitehall Portland Cement Co.
SMITH, HOWARD DEXTER A. M., Brown University, 1904. Ph. D., Tufts College, 1906. 839 Church St., Beloit, Wisconsin.	Sci.	Instructor in Chemistry, Beloit College.
STEERE, ROENA HOXSIE 98 Fifield St., Providence.	Sci.	Stenographer, with Anthony & Cowell Co.
WILBY, JOHN Flat River, Missouri.	Sci.	Supply Clerk, Central Lead Co

## 1902.

CLARKE, LATHAM A. M., Brown University, 1903. Ph. D., Harvard University, 1905. Boylston Hall, Cambridge, Mass.	Chem.	Instructor in Chemistry, Harvard University.
FERRY, OLIVER NEEDHAM 8 Armington Ave., Providence.	Mech.	With Providence Engineering Co.
MAXSON, RALPH NELSON Ph. D., Yale University, 1905. 366 Transylvania Park, Lexington, Ky.	Chem.	Professor of Inorganic Chemistry, State University.
PITKIN, ROBERT WILLIAM Rockville, Conn., R. F. D. No. 1.	Mech.	Farmer.

## 1903.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
BARBER, KATE GRACE . . . . . Ph. D., Yale University, 1906. Washington, D. C.	Gen. Sci.	Micro-analyst, Bureau of Chemistry, U. S. Department of Agriculture.
CONANT, WALTER AIKEN . . . . Care Sidney A. Wilbour, 35 Congress St., Boston, Mass.	Agr.	Dairying, Tryon, Polk Co., North Carolina.
GODDARD, WARREN, JR. . . . . Graduate New Church Theological School, 1907. 194 June St., Fall River, Mass.	Mech.	Minister, New Jerusalem Church.
KEEFER, EDITH CECILIA . . . . 13 Poplar St., Providence.	Biol.	Student, R. I. S. C.
KENT, RAYMOND WARREN . . . . A. M., Harvard University, 1904. Akron, Ohio.	Chem.	Chemist, Diamond Rubber Co.
TEFFT, ERNEST ALLEN . . . . . Broadway, Providence.	El. Eng.	With Amer. Locomotive Works.

## 1904.

BALLOU, WILLARD ALGER . . . . Brooklyn, N. Y.	Biol.	Instructor in Mathematics, Pratt Institute.
QUINN, MARY LOUISE . . . . . No. 12, "The Ringsdorf," Green Bay, Wis.	Biol.	Teacher of Botany and Physiology, East High School.
RODMAN, WALTER SHELDON . . . . M. S., R. I. C. A. & M. A., 1907, 12½ St. James Ave., Boston, Mass.	El. Eng.	Instructor in Physics and Electrical Engineering, R. I. S. C. (On leave. Graduate Student, Mass. Institute of Technology.)

## 1905.

CHAMPLIN, SARAH ELIZABETH . . . . 30 Portland St., Providence.	Gen. Sci.	Bookkeeper, Burt Mfg. Co., 226 Eddy St.
DOW, VICTOR WELLS . . . . . Southbridge, Mass.	High. Eng.	Traveling Representative of Barrett Mfg. Co.
GILMAN, JEAN . . . . . Hampton, Va.	High. Eng.	Assistant to Director of Trade School, Hampton Institute.
HARRALL, NELLIE ARMSTRONG . . . Wakefield.	Gen. Sci.	Student, Normal School of Physical Training, Cambridge, Mass.



## 1906.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ARNOLD, BENJAMIN HOWARD 32 Vine St., Lynn, Mass.	El. Eng.	With General Electric Co
BERRY, WALLACE NOYES Interlachen, Fla.	El. Eng.	
ELKINS, MARION GRAHAM 10 Moody St., Amesbury, Mass.	Gen. Sci.	Graduate student, Yale University, 119 Park St., New Haven, Conn.
HARDING, LEE LAPLACE Lyme, Conn.	High. Eng.	Graduate student, Yale University, 78 Lake Place, New Haven, Conn.
KEYES, FREDERICK GEORGE Sc. M., Brown Univ., 1907. 33 Hope College, Brown Univ., Providence.	Chem.	Graduate student, Brown University, and Instructor in Chemistry.
NICHOLS, HOWARD MARTIN 26 Congress St., Lynn, Mass.	El. Eng.	In Engineering Dept., General Electric Co.
SISSON, CORA EDNA Wickford.	Gen. Sci.	Teacher.
WILKINSON, ALBERT EDMUND The Outlook, Burlington, Mass.	Agr.	Farm Superintendent.

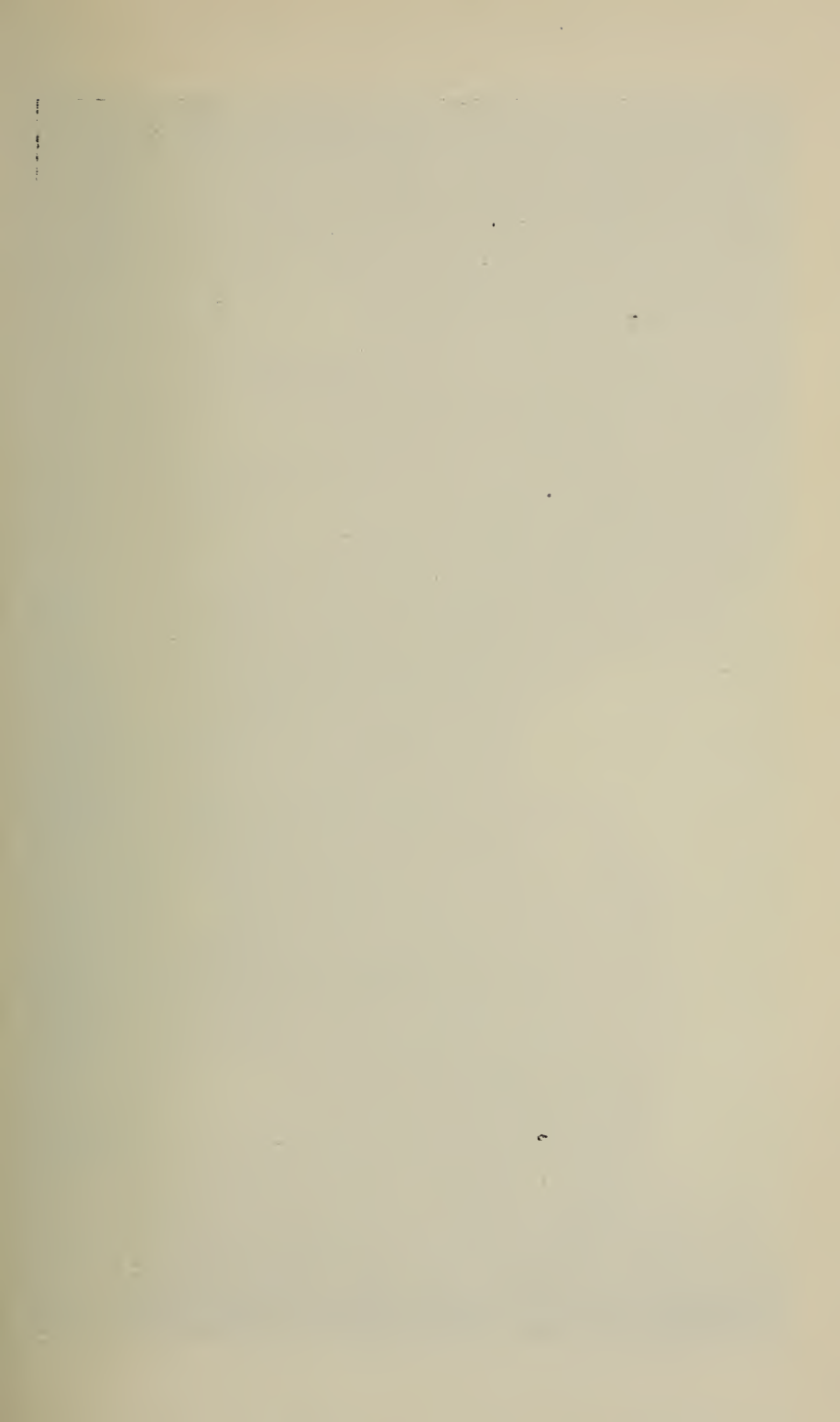
## 1907.

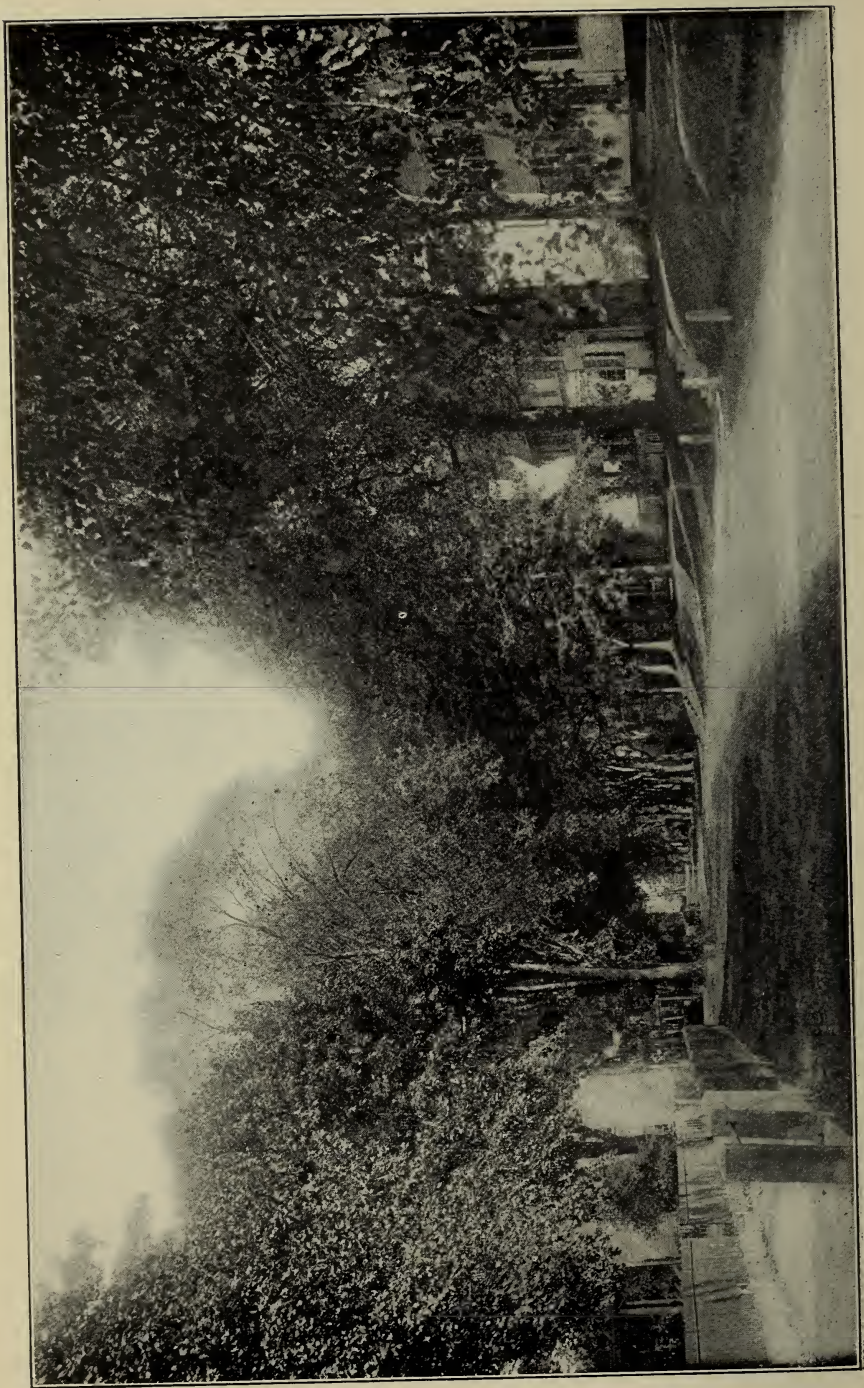
BARBER, ARTHUR HOUGHTON East Greenwich.	Mech. Eng.	Student, Cornell University, Ithaca, New York.
COGGINS, CALVIN LESTER Sharon, Mass.	El. Eng.	Graduate Student, Wilder Laboratory, Dartmouth College, Hanover, N. H.
FERRY, JAY RUSSELL 129 Cottage St., Everett, Mass.	High. Eng.	Draughtsman, with N. E. Structural Co.
KELLOGG, DAVID RAYMOND 176 W. Ninth Ave., Columbus, O.	Chem.	Assistant, Physics Dept., Ohio State University.
KENDRICK, WINFIELD SMITH 32 Vine St., Lynn, Mass.	El. Eng.	With General Electric Co.
LAMOND, JOHN KENYON Usquepaug.	El. Eng.	Graduate student, Yale University, 103 Park St., New Haven, Conn.
LEWIS, HARRY REYNOLDS Woodbine, New Jersey.	Agr.	Asst. Prof. Agriculture and Animal Husbandry, Baron de Hirsch Agricultural School.
MACOMBER, MINER SANFORD 78 Lake Place, New Haven, Conn.	Chem.	Graduate student in Physiol. Chemistry, Yale University.
TUCKER, ETHEL ALDRICH Kingston.	Gen. Sci.	Student in Kindergarten Course, R. I. State Normal School.

## 1908.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
DREW, JOSEPH DRAKE . . . 17 Old St., Brockton, Mass.	Chem.	Teacher, Rochester High School, N. H.
FIELD, CLESSON HERBERT . . . 20 W. 4th St., So. Bethlehem, Pa.	Civ. Eng.	Graduate C. E. student, Lehigh University.
FISKE, HERBERT ANDREW . . . 102 Superior St., Providence.	El. Eng.	Teacher. Bristol High School.
GARDINER, ROBERT FRANKLIN . Wakefield.	Chem.	
GORY, EDWARD ALLEN . . . 138 South Common St., Lynn, Mass.	El. Eng.	With General Electric Co.
KENYON, SUSAN ELNORA (MRS. FRED K. CRANDALL) . . Westerly.	Biol.	At home.
MITCHELL, CLOVIS WILLIAM . . 248 Montauk Ave., New London, Conn.	Civ. Eng.	Teacher, Mathematics and Science, Manual Training High School.
ROSE, ORPHA LILLIE . . . Peace Dale, R. F. D.	Gen. Sci.	Teacher, Kingston Gram. School.
SHELDON, GEORGE WARE . . . 12½ St. James Ave., Boston.	El. Eng.	Student, Mass. Institute of Tech- nology.
SHERMAN, MARY ALBRO . . . La Grange, Me.	Agr.	Teacher.
SMITH, JOHN LEBROC . . . Narragansett Pier.	El. Eng.	Teacher, St. Andrews Episcopal School, Barrington.
WHIPPLE, LUCIUS ALBERT . . . Greenville.	Civ. Eng.	Teacher, Mathematics and Physi- cal Science, The Abbott School, Farmington, Me.







THE VILLAGE STREET.



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BULLETIN OF RHODE ISLAND STATE COLLEGE.

VOL. VI. NO. 1.

FOR MAY, 1910.

CATALOGUE OF THE COLLEGE.



REPORT OF BOARD OF MANAGERS--PART III.

KINGSTON, R. I.

1910.

PUBLISHED QUARTERLY BY THE COLLEGE

MAY, AUGUST, NOVEMBER, FEBRUARY.

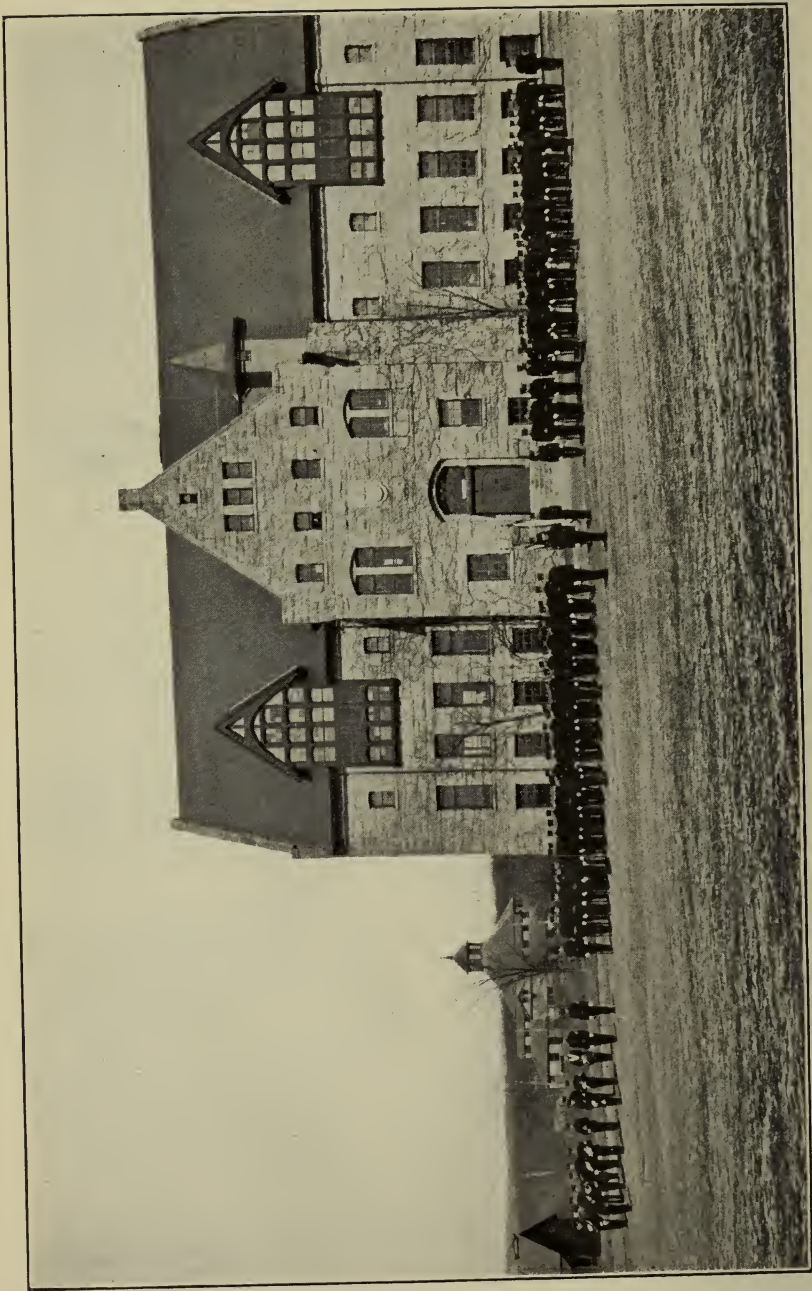
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COLLEGE BATTALION.

# TWENTY-SECOND ANNUAL REPORT

OF THE

## BOARD OF MANAGERS

OF

# RHODE ISLAND STATE COLLEGE,

MADE TO THE

General Assembly at its January Session, 1910.

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## PART III—CATALOGUE.

Part I—General Report—is printed under separate cover.

Part II—Experiment-Station Report—is printed under separate cover.

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Providence, R. I.

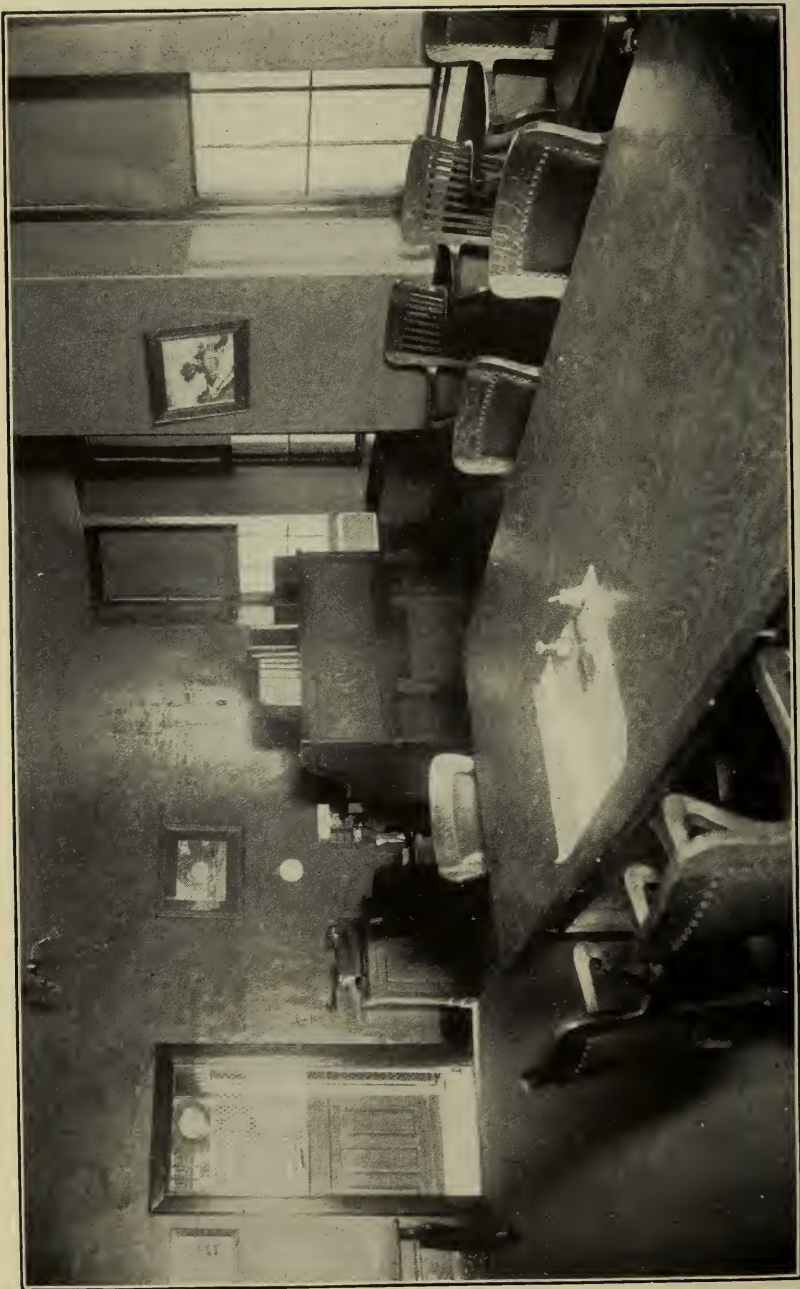
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1910.



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BOARD ROOM—DAVIS HALL.



# Rhode Island State College.

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HON. CHARLES ESTES.....	BRISTOL COUNTY.
HON. CHARLES DEAN KIMBALL.....	PROVIDENCE COUNTY.
HON. THOMAS G. MATHEWSON.....	KENT COUNTY.
HON. J. V. B. WATSON.....	WASHINGTON COUNTY.
HON. WALTER E. RANGER..	STATE COMMISSIONER OF SCHOOLS, <i>ex-officio</i> .
HON. PHILIP A. MONEY.....	MEMBER OF STATE BOARD OF AGRICULTURE.

---

## Officers of the Corporation.

HON. CHAS. DEAN KIMBALL, President.....	PROVIDENCE.
HON. ROBERT S. BURLINGAME, Clerk and Treasurer.....	NEWPORT.

---

## Board of Visitors, for 1910.

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MRS. FRANK E. MARCHANT.....	WEST KINGSTON.
SUPERINTENDENT CLAIR G. PERSONS.....	WARREN.
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## Report.

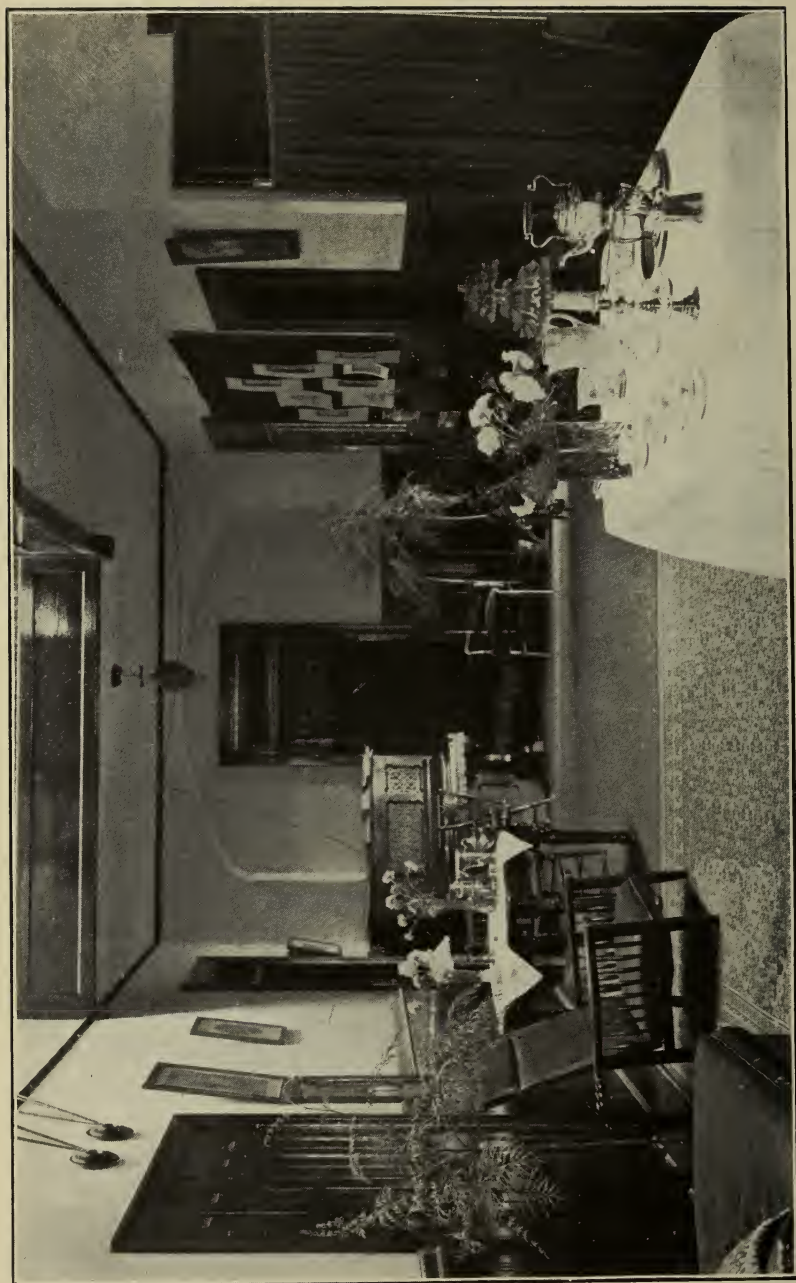
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*To His Excellency Aram J. Pothier, Governor, and the Honorable General Assembly of the State of Rhode Island and Providence Plantations, at its January Session, 1910:*

I have the honor to submit herewith Part Three of the Twenty-Second Annual Report of the Board of Managers of Rhode Island State College, as required by law.

CHARLES DEAN KIMBALL,  
*President of the Board of Managers of Rhode Island State College.*





NEW RECEPTION HALL—WOMEN'S DORMITORY.

## Faculty and Other Officers.

---

HOWARD EDWARDS, A. M., LL. D.,

PRESIDENT,

*Professor of Political Economy and Social Science.*

HOMER JAY WHEELER, PH. D.,

*Professor of Geology.*

E. JOSEPHINE WATSON, A. M.,

*Professor of Languages.*

HARRIET LATHROP MERROW, A. M.,

*Professor of Botany and Secretary of the Faculty.*

VIRGIL LOUIS LEIGHTON, PH. D.,

*Professor of Chemistry.*

JOHN BARLOW, A. M.,

*Professor of Zoölogy.*

MARSHALL HENRY TYLER, B. S.,

*Professor of Mathematics.*

GEORGE EDWARD ADAMS, B. S.,

*Chief of Department of Agriculture and Professor of Agronomy.*

ANDREW EDWARD STENE, M. S.,

*Superintendent of College Extension.*

SAMUEL HARVEY WEBSTER, B. S.,

*Professor of Civil Engineering.*

ROYAL LINFIELD WALES, B. S.,

*Chief of Department of Engineering and Professor of Mechanical Engineering.*



## RHODE ISLAND STATE COLLEGE.

HENRY GILMORE STAHL,

First Lieutenant Sixth Infantry, United States Army,  
*Professor of Military Science and Tactics.*

BURT LAWS HARTWELL, PH. D.,

*Professor of Agricultural Chemistry.*

HELEN BISHOP THOMPSON, M. S.,

*Professor of Home Economics.*

LEONARD PERLEY DICKINSON, B. S.,

*Professor of Physics and Electrical Engineering.*

CLYDE BESTOR COLEMAN, B. S.,

*Professor of Animal Husbandry.*

WILLIAM SAWYER SPENCER, B. D.,

*Assistant Professor of Argumentation and Oral Expression.*

JACOB ALGER FOTTLER, B. S.,

*Assistant Professor of Physics and Electrical Engineering.*

THOMAS CARROLL RODMAN,

*Instructor in Woodwork.*

MABEL DEWITT ELDRED, B. S.,

*Instructor in Drawing.*

HOWLAND BURDICK, B. S.,

*Instructor in Dairying.*

DANIEL JOSEPH LAMBERT,

*Instructor in Poultry Keeping.*

JOHN RALEIGH ELDRED, B. S.,

*Instructor in Mechanical Engineering.*

FRANCIS HERVEY SMITH, M. S.,

*Instructor in Chemistry.*

FLORENCE H. MYRICK, B. S.,

*Instructor in Languages.*

GEORGE ROBERT COBB, B. S.,

*Instructor in Horticulture.*

HERBERT SETON EAMES, B. S.,

*Instructor in Mechanical Engineering.*

WARREN SNEDEN HIGGINS, E. E.,

*Instructor in Mathematics.*

MARION LINCOLN CHAMBERLAIN, B. S.,

*Librarian.*

EMILE ARTHUR MALLETTE,

*Florist.*

LUCY COMINS TUCKER,

*Head Clerk and Secretary to the President.*

LILLIAN EDNA TOLMAN,

*Bursar.*

JENNIE CRANDALL THOMPSON,

*Bookkeeper.*

## Lecturers.

### Poultry Course.

---

- E. Collins Tefft, Wakefield, R. I., POULTRY AND FRUIT CULTURE. Two lectures.
- Christopher N. Gallup, Augusta, Me., THE GRAIN CROPS AND POULTRY. One lecture.
- Henry D. Smith, Rockland, Mass., THE PRODUCTION OF SOFT ROASTERS. Two lectures. DEMONSTRATION OF CAPONIZING.
- W. H. Card, Manchester, Conn., CHALK TALKS. BREEDS AND TYPES OF FOWLS. Four lectures.
- Ernest L. Winslow, Apponaug, R. I., PIGEONS AND SQUABS. One lecture.
- John H. Robinson, Boston, Mass., POULTRY HOUSES AND FIXTURES. FEEDING POULTRY. BREEDS AND BREEDING. Three lectures.
- F. H. Stoneburn, Storrs, Conn., THE POULTRY SYSTEMS. WHITE DIARRHŒA. PRESERVATION OF EGGS. One lecture.
- Wm. F. Kirkpatrick, Kingston, R. I., FEEDING POULTRY. TURKEY EXPERIMENTS. One lecture.
- Roy H. Waite, Kingston, R. I., SOME OF THE ESSENTIALS OF SUCCESS IN THE POULTRY BUSINESS. One lecture.
- Geo. A. Cosgrove, Willington, Conn., POULTRY ON THE FARM. EGG PRODUCTION. One lecture.
- O. W. Mapes, Middletown, N. Y., OPPORTUNITIES FOR PROFIT WITH POULTRY ON EASTERN FARMS. One lecture.
- Samuel Knowles, Lexington, Mass., OPPORTUNITIES FOR PROFIT WITH POULTRY ON LIMITED LAND. One lecture.

### Farmers' Week.

- Dr. B. L. Hartwell, Experiment Station, FARM MANURES. One lecture.
- Dr. H. J. Wheeler, Experiment Station, SOILS AND FERTILIZERS. One lecture.
- Prof. G. E. Adams, College, CORN CULTURE. One lecture.
- N. H. Brewer, Hockanum, Conn., CORN JUDGING. One lecture.
- Prof. C. B. Coleman, College, FEEDING FARM ANIMALS. DAIRY CATTLE. HERD TESTING ASSOCIATIONS. Three lectures.
- Howland Burdick, College, SHEEP. THE CARE OF MILK. BABCOCK TEST. Three lectures.

## Experiment-Station Staff.

---

HOWARD EDWARDS, M. A., LL. D.....	{ President of the College. Ex-officio Member.
H. J. WHEELER, Ph. D.....	Director ; Agronomy.
BURT L. HARTWELL, Ph. D*.....	Chemistry.
GEORGE E. ADAMS, B. S.....	Horticulture.
PHILIP B. HADLEY, Ph. D.....	Biology.
S. C. DAMON, B. S.....	Assistant, Agronomy.
ALBERT L. WHITING, B. S.....	Assistant, Agronomy.
JOHN DANIEL, B. S.....	Assistant, Agronomy.
J. FRANK MORGAN, M. A.....	Assistant, Chemistry.
L. F. WHIPPLE.....	Assistant, Chemistry.
FREDERICK S. HAMMETT, A. B.....	Assistant, Chemistry.
ROBERT A. LICHTENTHAELER, M. S.....	Assistant, Chemistry.
F. R. PEMBER, M. S.....	Assistant, Plant Physiology.
E. A. MALLETTE.....	Assistant, Floriculture.
W. F. KIRKPATRICK, B. Agr., B. E.....	Assistant, Biology.
ROY H. WAITE, B. S.....	Assistant, Biology.
ELIZABETH E. AMISON, B. S.....	Assistant, Biology.
NATHANIEL HELME.....	Meteorology.
E ELIZABETH MEEARS.....	Stenographer and Librarian.
ZILLA M. CONSTABLE, B. S.....	Stenographer and Accountant.
ZELINDA E. HAGER.....	Stenographer.

---

*The publications of the Station will be mailed free, upon request, to residents of Rhode Island. Suggestions as to how the station can aid the state are gladly received. Visitors are always welcome. Railway station, telegraph, express, and post-office—Kingston, Rhode Island. Long-distance telephone, Narragansett Pier Exchange.*

---

\*In charge of experiments in plant physiology and animal feeding.

# CALENDAR.

## 1910.

## 1911.

	S	M	T	W	T	F	S		S	M	T	W	T	F	S		S	M	T	W	T	F	S
JUNE.	2	3	4	5	6	7	8	JAN.	1	2	3	4	5	6	7		1	2	3	4	5	6	7
MAY.	9	10	11	12	13	14	15	FEB.	8	9	10	11	12	13	14		8	9	10	11	12	13	14
APRIL.	16	17	18	19	20	21	22	MARCH.	15	16	17	18	19	20	21		15	16	17	18	19	20	21
MARCH.	23	24	25	26	27	28	29	APRIL.	22	23	24	25	26	27	28		22	23	24	25	26	27	28
FEB.	30	31	1	2	3	4	5	MAY.	29	30	31	1	2	3	4		29	30	31	1	2	3	4
JAN.	6	7	8	9	10	11	12	JUNE.	5	6	7	8	9	10	11		5	6	7	8	9	10	11
	13	14	15	16	17	18	19		12	13	14	15	16	17	18		12	13	14	15	16	17	18
	20	21	22	23	24	25	26		19	20	21	22	23	24	25		19	20	21	22	23	24	25
	27	28	1	2	3	4	6		26	27	28	1	2	3	4		26	27	28	1	2	3	4
	6	7	8	9	10	11	12		5	6	7	8	9	10	11		5	6	7	8	9	10	11
	13	14	15	16	17	18	19		12	13	14	15	16	17	18		12	13	14	15	16	17	18
	20	21	22	23	24	25	26		19	20	21	22	23	24	25		19	20	21	22	23	24	25
	27	28	29	30	31	1	2		26	27	28	29	30	31	1		26	27	28	29	30	31	1
	3	4	5	6	7	8	9		2	3	4	5	6	7	8		2	3	4	5	6	7	8
	10	11	12	13	14	15	16		9	10	11	12	13	14	15		9	10	11	12	13	14	15
	17	18	19	20	21	22	23		16	17	18	19	20	21	22		16	17	18	19	20	21	22
	24	25	26	27	28	29	30		23	24	25	26	27	28	29		23	24	25	26	27	28	29
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	8	9	10	11	12	13	14		6	7	8	9	10	11	12		6	7	8	9	10	11	12
	15	16	17	18	19	20	21		13	14	15	16	17	18	19		13	14	15	16	17	18	19
	22	23	24	25	26	27	28		20	21	22	23	24	25	26		20	21	22	23	24	25	26
	29	30	31	1	2	3	4		27	28	29	30	1	2	3		27	28	29	30	1	2	3
	5	6	7	8	9	10	11		4	5	6	7	8	9	10		4	5	6	7	8	9	10
	12	13	14	15	16	17	18		11	12	13	14	15	16	17		11	12	13	14	15	16	17
	19	20	21	22	23	24	25		18	19	20	21	22	23	24		18	19	20	21	22	23	24
	26	27	28	29	30	1	2		25	26	27	28	29	30	31		25	26	27	28	29	30	31



## College Calendar.

---

Wednesday, September 21.....	Chapel Exercises, 8:15 A. M.
Registration, examination of entering and conditioned students, 9 A. M.	
Thursday, September 22.....	Recitations begin, 8:35 A. M.
Tuesday, November 8.....	Election Day.
Wednesday, November 23, 12:15 P. M. }	Thanksgiving Recess.
Monday, November 28, 8:15 A. M. }	
Friday, December 23, 12:15 P. M. }	Christmas Recess.
Wednesday, January 4, 1911, 8:15 A. M. }	
Friday, February 10, 4:15 P. M.....	First Term ends.
Tuesday, February 14.....	Entrance Examinations, 9 A. M.
Wednesday, February 15.....	Second Term begins, 8:15 A. M.
Registration, 9 A. M. Recitations begin, 1:30 P. M.	
Sunday, February 19.....	Day of Prayer for Colleges.
Wednesday, February 22.....	Washington's Birthday.
Friday, May 12.....	Arbor Day.
Tuesday, May 30.....	Memorial Day.
Sunday, June 18.....	Baccalaureate Address.
Thursday, June 22.....	Commencement Exercises.
Friday, June 23.....	Entrance Examinations, 9 A. M.



## RHODE ISLAND STATE COLLEGE.

---

### Foundation.

The college is one of the so-called land-grant colleges. Of the purpose of these institutions Senator Morrill, the author of the national legislation which brought them into existence in all the states, says:

“The fundamental idea was to offer an opportunity in every state for a liberal and larger education to larger numbers, not merely those destined to sedentary professions, but to those needing higher instruction for the world’s business, for the industrial pursuits and professions of life.” Again he says: “It was to give a chance to the industrial classes of the country to obtain a liberal education, something more than what was bestowed by our universities and colleges in general, which seemed to be based more on the English plan of giving education only to what might be called the professional classes, in law, medicine and theology.”

The college has also a well-defined investigative purpose in its experiment station, organized as a department of the college and endowed by the general government.

The resources of the college are as follows:

(1) The interest on \$50,000, which was the net amount received by the state from the sale of its scrip for 120,000 acres of land, granted by the general government in 1862. This fund came to the college in 1894.

(2) The annual appropriation of \$15,000 from the general government, under what is known as the Hatch Act of 1887. This fund is exclusively for experimental purposes.

(3) The annual appropriation of \$25,000 from the general government under the second Morrill Act of 1890. This fund is for teaching the subjects distinctly named and specified in the act, as follows: “to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special

reference to their applications in the industries of life, and to the facilities for such instruction."

(4) The funds coming from the general government to the state under the Adams Act of 1906, yielding \$7,000 in 1906, and increasing each year by \$2,000, until the whole shall amount, in 1910, to \$15,000. This fund is exclusively for experimental purposes.

(5) The funds from the general government under the Nelson Amendment of 1907, amounting on July 1, 1907, to \$5,000, and increasing yearly thereafter by \$5,000 until the whole, in 1911, will amount to \$25,000. This amendment is simply an extension of the 1890 Morrill grant and carries the same restrictions.

(6) The annual maintenance fund from the state of \$25,000, used for all the purposes for which the funds of the general government can not be used: *e. g.*, for extension work; for executive and administrative work; for heating, lighting and maintenance of buildings; for the teaching of modern languages other than English, of history and civics; for student labor, maintenance of grounds, roads, etc.

The college was founded in 1888 as an agricultural school. In 1892 it was incorporated as a college. The courses of study have been on a college basis since 1892; the requirements for a degree were raised in 1898; and the curriculum was again thoroughly revised during the years 1906-07 and 1907-08. The course in home economics for young women was introduced in 1908.

## Object and Organization.

The function of the Rhode Island State College is to aid in fostering the industrial life of the state, at least in so far as pertains to agriculture, manufactures, transportation, and home-making. This it does in three ways: 1. By the investigation and discovery of new truth, more or less directly applicable in the industries. 2. By the direct distribution of industrial information to the people. 3. By the organization and administration of definite courses of instruction designed to fit young men and young women for effective work in the industrial pursuits.

The first of these duties is performed by the

## Experiment Station,

for a description of the work of which the reader is referred to the report of the director, constituting Part II of the Report of the Board of Managers for the current year. A statement of its staff organization may be found on page 9 of this catalogue.

The experiment station takes part, also, in the second phase of the college activities, by distributing its bulletins to all that desire and apply for them. In order, however, more fully and directly to bring the college and its work into touch with the people, a

## College Extension Department

has been organized, and is in active operation.

The purpose of this department is to carry the instruction of the college to those who cannot come to it for study. Whenever necessary and possible, visits will be made to any part of the state to examine farms, orchards, and gardens; to identify injurious insects or plant diseases, or give instruction in regard to methods of treatment; or to examine soils with a view to suggesting remedies for lack of fertility. General plans for laying out farms and for carrying out the details of any farm operation will be given the fullest consideration. The college is open for consultation at any time in regard to any problem of the farm, garden, or orchard. The fullest correspondence is invited, and conscientious consideration will be given to every letter received. In conjunction with this phase of the work popular bulletins are issued from time to time, which endeavor to present the gist of agricultural information on various topics without the uninteresting detail of the regular experiment-station bulletin.

Whenever possible, arrangements will be made for demonstrations or lectures by members of the college faculty and experiment-station staff when called for by any agricultural meeting or neighborhood gathering. A number of lectures on various subjects have been prepared, which can be secured on short notice by any gathering or organization within the state. These lectures are free, the only charge being the traveling expenses of the speaker. A complete list of the lectures, together with such other information in regard to them as may be of interest, has been prepared and may be obtained by sending a postal-card request to the department.



An important part of this extension work is to be the encouragement of home study and the conducting of correspondence courses. For the present, time and funds will not permit the carrying out of this plan, but advice will be given to any person wishing to take up home study regarding courses of reading, books, and other literature which may be necessary in connection with such work.

Under the direction of the state commissioner of public schools, books on agriculture, home economics, and related subjects, have been purchased and, together with a selected list of bulletins and reports, have been made up into a traveling library to be sent out over the state. The demand for this library has been so great that Commissioner Ranger has recently purchased books for four more libraries, which will soon be ready for distribution. If these are not sufficient, books for additional libraries will be purchased as the demand increases.

Another important phase of nature study, which aims to interest the young people of the schools in things of nature and of the farm, is

### The Nature Guard.

The Nature Guard is an organization of young people formed for the purpose of awakening in its members a livelier interest in the things of outdoor life. Its object is to stimulate the power of observation and to lay the foundation for a simple, rational education, which shall give the individual a love for nature and a sympathy with his environment, and furnish him with the means of making life more useful and more enjoyable, whether lived in the country or in the city.

The boys and girls in one school, or in one room, if the school is graded, form themselves into a band and elect officers, which are a spy and a guardian. This band fixes its own time for meeting and adopts its own methods of procedure. Enrollment cards to be signed and returned are furnished from the college. A charter will be sent to each band upon completing enrollment. Each member who sends in an enrollment card will receive an appropriate lapel button indicating that he belongs to the Nature Guard. At the end of the year, a neat certificate will be forwarded to all who have sent in reports during the year.

A printed leaflet is issued monthly during the school year, and a copy is sent to each member of the Nature Guard, and also, on

request, to individuals who are interested. The purpose of the leaflet is to furnish a stimulus to nature study by giving each month some suggestions bearing on the subject. Monthly reports, giving observations of their own, are requested from the members. Supplemental leaflets for teachers will be issued from time to time, the object of which will be to call attention to the latest views and methods in nature study.

In connection with the nature-study work, advice and assistance will be given to schools, to children's organizations, and to individual boys and girls who wish to carry on work with children's gardens. Where a number of gardens are placed together, as in schools or in boys' clubs, the college will, if possible, send an instructor to teach methods of preparing the ground, planting, cultivating, and harvesting garden crops. Individuals will be given advice by circulars and by correspondence. During the past two seasons this department has had a special instructor in school gardening, and in co-operation with the State Board of Agriculture and the League of Improvement Societies, school gardens have been conducted in connection with the schools in Providence and other places. The demand for this work is increasing and can be easily enlarged as soon as funds for its maintenance are provided.

At the request of the college, the Washington County Agricultural Society has arranged to grant premiums to children for seed and plant collections, and for exhibits of a few vegetables which can be easily grown, either in school or home gardens.

Further notes in regard to this work are given in leaflets and circulars issued by the extension department, and correspondence is solicited from any who may be interested.

## The College as an Educational Agency.

In its third form of activity, the purpose and work of the Rhode Island State College is to give college training and culture to young men and young women, not in spite of, but through and with vocational studies. Its courses are intended, first of all, to make the student a self-supporting unit in society, a positive force for social advancement, able and willing not only to maintain himself, but also to carry something of the common social burdens that always weigh upon the thoroughly efficient worker.

## I. THE FOUR-YEAR COURSES.

To this end certain college courses, intended to fit men and women for efficiency and leadership in well-defined life-activities, have been prepared. These courses are all founded upon training in mathematics, pure and applied; the English language as a means of intercommunication; and the sciences that deal with matter, force, and life as applied more directly to agriculture, the mechanic arts, and home economics. In the pursuit of these vocational studies, the effort is to accumulate an array of knowledge that, in the activities of industrial life, must be always practically serviceable, and, at the same time, to gain a disciplinary training both of brain and of muscle and nerve that makes for practical effectiveness. These courses, moreover, recognizing that a college course should include not only intellectual training and the knowledge and skill requisite for bread-winning, but also preparation for citizenship, for moral and social life, have intertwined with the vocational work and study previously mentioned; the subjects that most directly make for culture and morality—history, economics, literature, languages, ethics, psychology, and sociology. These are ranked as of equal importance with the bread-winning studies.

The college courses just discussed are four years in length, and base themselves directly on the work of the four years of the high schools. They thus become an integral part of the school system of the state. Young men and young women, citizens of the state and having requisite high-school training, are admitted to these courses without charge for tuition.

The four-year courses thus offered are the agricultural course, the engineering course, the teachers' course in applied science, and the course in home economics.

### The Agricultural Course.

The agricultural course is intended to give thorough preparation for taking charge of and operating a piece of landed property. Its work is centered around instruction and practice in horticulture, general farming, and animal husbandry (more especially as applied to dairying and the poultry industry). The course consists of practical work combined with thorough study of the sciences bearing directly on such work, viz.: botany, chemistry, geology, zoölogy,

anatomy, physics, and entomology. In addition, it embraces the culture and mental discipline arising from the study of mathematics, English composition and rhetoric, history, drawing, modern languages, economics, and English literature. The course is planned to give the student a full and rounded development as worker, as citizen, and as man.

All agricultural students will follow the same work in the first two years; but, at the beginning of the Junior year, with the required work for all students in the course, three optional lines of work are offered, one of which must be selected by the student and followed until graduation. The three lines offered are agronomy, horticulture, and animal husbandry. No option and no subject will be given for which a number of students sufficient to warrant giving it has not applied. The tabulated course follows:

### Freshman Year.

FIRST TERM.	CREDITS.*	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I) ..	2	Rhetoric and Composition (English I) ..	2
German or French (I or II) .....	4 or 3	German or French (I or II) .....	4 or 3
Algebra (Math. I) Trigonometry (Math. II) .....	5	General Chemistry and Qualitative Analysis (Chem. II) .....	3 [1½]
General Chemistry (Chem. I) .....	2 [1½]	General Botany (Botany I) .....	1 [2]
General Botany (Botany I) .....	1 [2]	Stock Judging (An. Husb. I) .....	[2]
Propagation of Plants (Hort. I) .....	1 [1]	Breeds (An. Husb. III) .....	2
Drawing, Pencil (Fr. Dr. II) .....	[1]	Poultry (An. Husb. XII) .....	¶ [1]
Drill (Mil. Sci. and T. I) .....	[1]	Spraying and Pruning (Hort. IV) .....	1 [1]
Theory (Mil. Sci. and T. II) .....	1	Drill (Mil. Sci. and T. I) .....	1 [1]
		Theory (Mil. Sci. and T. II) .....	1

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II) .....	1	Argumentation (English III) .....	1
Interpretive Reading (Oral Expr. I) ..	1	Interpretive Reading (Oral Expr. I) ..	1
German or French (II) .....	3	German or French (II) .....	3
Qualitative Analysis (Chem. III) .....	[3]	Organic Chemistry (Chem. IV) .....	3 [1]
Economic Botany (Botany II) .....	1 [2]	Descriptive Physics (Physics I) .....	5
General Zoölogy (Zoöl. I) .....	2 [2]	Physiology (Zoöl. III) .....	3 [1]
Forage Plants (Agron. II) .....	2	Geology (I) .....	2
Vegetable Gardening (Hort. II) .....	2	Drill (Mil. Sci. and T. I) .....	[1]
Surveying (Civ. Eng. I) .....	1 [2]		
Drill (Mil. Sci. and T. I) .....	[1]		

### Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern Prose (English IV) .....	2	Modern Prose (English IV) .....	1
Debating (Oral Expr. III) .....	1	Debating (Oral Expr. III) .....	1
Industrial History (History I) .....	2	Industrial History (History I) .....	3
Agricultural Chemistry (Chem. XIV) ..	3 [1]	Forestry (Botany IV) .....	2
Soils and Fertilizers (Agron. III) .....	4 [1½]	Economic Entomology (Zoöl. IV) .....	3 [1]
Dairy Practice (An. Husb. VII) .....	1 [1½]	Farm Crops (Agron. IV) .....	3 [1]
Fruit Culture (Hort. III) .....	2	Farm Management (Agron. VII) .....	¶ 2
Drill (Mil. Sci. and T. I) .....	[1]	Farm Machinery (Agron. VI) .....	2 [1]
		Drill (Mil. Sci. and T. I) .....	[1]

\* A credit is given for one recitation per week; or for one exercise of two hours per week in laboratory, field or shop. Credits for the latter are enclosed in brackets.



## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II), Oratory (Oral Expr. IV).....	5	Civil Government (History II), Modern English Poetry (English V), Oratory (Oral Expr. IV).....	5
Agric. Experimentation (Agron. X)...	3	Breeding (An. Husb. IV).....	3
Plant Breeding (Agron. XI).....	3	Vet. Medicine (An. Husb. X).....	3
Feeding (An. Husb. VI).....	3	Landscape Gardening (Hort. XIII)....	2 [1]
Landscape Gardening (Hort. XIII)....	2 [1]	Elective.....	8
Elective.....	5	Drill (Mil. Sci. and T. I).....	[1]
Drill (Mil. Sci. and T. I).....	[1]		

## The Engineering Course.

The engineering course has the same requirements for entrance, the same duration, and the same general plan as the agricultural course. Students will follow the course as laid down until the second half of the Sophomore year, at which time, as with the agricultural course, students must elect one of the four optional lines offered, viz.: mechanical, electrical, civil, and chemical engineering. Any line of work for which the number of applicants is insufficient to warrant giving it, the college reserves the right to withdraw.

The course is arranged to prepare young men for skilled and efficient work in the great manufacturing and commercial industries of the state; in the development of electricity as a motive force and in its thousand-fold other applications to the arts and to the life of society; in the activities of the new road-building era upon which we are entering; and in the applications of chemistry as now found in the great industrial establishments. At the same time, in this as in all other courses, it is not forgotten that the man is not a mere lever in his own machinery, and the effort after breadth and completeness of life is steadily maintained. The tabulated course follows:

## Freshman Year.

For the first year the course is the same for all students of engineering.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I)..	2	Rhetoric and Composition (English I)..	2
German or French (I or II).....	4 or 3	German or French (I or II).....	4 or 3
Algebra (Math. I), Trigonometry (Math. II).....	5	Trigonometry, complete (Math. VII), Analytics (Math. VIII).....	5
General Chemistry (Chem. I).....	2 [1½]	General Chemistry and Qualitative Analysis (Chem. II).....	3 [1½]
Mechanical Drawing (Mech. Eng. I)...	[3]	Mechanical Drawing (Mech. Eng. I)...	[2]
Forge and Foundry (Mech. Eng. II)...	[3]	Pattern Making (Mech. Eng. III).....	[3]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]
Theory (Mil. Sci. and T. II).....	1	Theory (Mil. Sci. and T. II).....	1



## MECHANICAL ENGINEERING.

## Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I)....	1	Interpretive Reading (Oral Expr. I)....	1
Qualitative Analysis (Chem. III).....	[3]	General Physics (Physics II).....	4
General Physics (Physics II).....	4	Laboratory (Physics III).....	[1½]
Laboratory (Physics III).....	[1½]	Calculus, completed (Math. XI).....	5
Analytics, completed (Math. IX), Calculus (Math. X).....	5	Graphic Statics (Mech. Eng. IV).....	2
Descriptive Geometry (Mech. Eng. V).....	1 [2]	Mechanical Drawing (Mech. Eng. VI).....	[3]
Surveying (Civ. Eng. I).....	1 [2]	Machine Shop (Mech. Eng. VII).....	[3]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern English Prose (English IV)....	2	Modern English Prose (English IV)....	1
Debating (Oral Expr. III).....	1	Debating (Oral Expr. III).....	1
Industrial History (History I).....	2	Industrial History (History I).....	3
Steam Engineering (Mech. Eng. IX)....	3	Steam Engineering (Mech. Eng. IX)....	3
Applied Mechanics (Mech. Eng. X)....	5	Applied Mechanics (Mech. Eng. X)....	5
Mechanism (Mech. Eng. XII).....	3	Hydraulics (Mech. Eng. XI).....	5
Machine Shop (Mech. Eng. XIV).....	[3]	Valve Gears and Dynamics (Mech. Eng. XIII).....	3
Experimental Engineering a (Mech. Eng. XV).....	[2]	Machine Shop (Mech. Eng. XIV).....	[3]
Drill (Mil. Sci. and T. I).....	[1]	Experimental Engineering b (Mech. Eng. XVI).....	[2]
		Drill (Mil. Sci. and T. I).....	[1]

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II), Oratory (Oral Expr. IV).....	5	Civil Government (History II), Modern English Poetry (English V), Oratory (Oral Expr. IV).....	5
Experimental Engineering' c (Mech. Eng. XVII).....	2 [2]	Experimental Engineering d (Mech. Eng. XVIII).....	2 [2]
Machine Design (Mech. Eng. XX).....	[3]	Machine Design (Mech. Eng. XX).....	[3]
Power Plants and Design (Mech. Eng. XXI).....	2 [1]	Heating and Ventilation (Mech. Eng. XIX).....	2
Assigned Work (Mech. Eng. XXII)....	3	Power Plants and Design (Mech. Eng. XXI).....	2
Theory of Direct Currents (El. Eng. I).....	3	Assigned Work (Mech. Eng. XXII)....	3
Drill (Mil. Sci. and T. I).....	[1]	Theory of Alternating Currents (El. Eng. IV).....	2
		Drill (Mil. Sci. and T. I).....	[1]

## ELECTRICAL ENGINEERING.

## Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I)....	1	Interpretive Reading (Oral Expr. I)....	1
Qualitative Analysis (Chem. III).....	[3]	General Physics (Physics II).....	4
General Physics (Physics II).....	4	Laboratory (Physics III).....	[1½]
Laboratory (Physics III).....	[1½]	Calculus, completed (Math. XI).....	5
Analytics, completed (Math. IX), Calculus (Math. X).....	5	Graphic Statics (Mech. Eng. IV).....	2
Descriptive Geometry (Mech. Eng. V).....	1 [2]	Mechanical Drawing (Mech. Eng. VI).....	[3]
Surveying (Civ. Eng. I).....	1 [2]	Machine Shop (Mech. Eng. VII).....	[3]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern English Prose (English IV)...	2	Modern English Prose (English IV)...	1
Debating (Oral Expr. III).....	1	Debating (Oral Expr. III).....	1
Industrial History (History I).....	2	Industrial History (History I).....	3
Theory of Direct Currents (El. Eng. I).	3	Direct-Current Laboratory (El. Eng.	[3]
Electrical Measurements (Physics IV).	1½	II).....	
Electrical Meas. Laboratory (Physics V)	1½	Theory of Alternating Currents (El.	2
Steam Engineering (Mech. Eng. IX)...	3	Eng. IV).....	
Applied Mechanics (Mech. Eng. X)...	5	Principles of Illumination (Physics VI).	1
Experimental Engineering a (Mech.	[2]	Steam Engineering (Mech. Eng. IX)...	3
Eng. XV).....		Applied Mechanics (Mech. Eng. X),	5
Drill (Mil. Sci. and T. I).....	[1]	Hydraulics (Mech. Eng. XI).....	
		Experimental Engineering b (Mech.	[2]
		Eng. XVI).....	
		Drill (Mil. Sci. and T. I).....	[1]

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I.), Civil	5	Civil Government (History II), Modern	5
Government (History II), Oratory		English Poetry (English V), Oratory	
(Oral Expr. IV).....		(Oral Expr. IV).....	
Theory of Alternating Currents (El.	3	Theory of Alternating Currents (El.	3
Eng. V).....		Eng. V).....	
Alternating-Current Laboratory (El.	[3]	Alternating-Current Laboratory (El.	[3]
Eng. VI).....		Eng. VI).....	
Design of Electrical Machinery (El.	[½]	Design of Electrical Machinery (El.	[3]
Eng. VII).....		Eng. VII).....	
Electrical-Measurements Laboratory	[1]	Transmission of Energy (El. Eng. X)..	2
(Physics VII).....		Electric-Railway Engineering (El. Eng.	
Telephone Engineering (El. Eng. VIII)..	1	XI).....	2
Assigned Work (El. Eng. XII).....	[3]	Assigned Work (El. Eng. XII).....	[3]
Experimental Engineering c (Mech.	2 [2]	Drill (Mil. Sci. and T. I).....	[1]
Eng. XVII).....			
Drill (Mil. Sci. and T. I).....	[1]		

## CIVIL ENGINEERING.

## Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I)...	1	Interpretive Reading (Oral Expr. I)...	1
Qualitative Analysis (Chem. III).....	[3]	General Physics (Physics II).....	4
General Physics (Physics II).....	4	Laboratory (Physics III).....	[1½]
Laboratory (Physics III).....	[1½]	Calculus, completed (Math. XI).....	5
Analytics, completed (Math. IX), Cal-		Graphic Statics (Mech. Eng. IV).....	2
culus (Math. X).....	5	Mechanical Drawing (Mech. Eng. VI).	[3]
Descriptive Geometry (Mech. Eng. V)...	1 [2]	Machine Shop (Mech. Eng. VII).....	[1½]
Surveying (Civ. Eng. I).....	1 [2]	Topographic Surveying (Civ. Eng. II)..	1 [2]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern English Prose (English IV)...	2	Modern English Prose (English IV)...	1
Debating (Oral Expr. III).....	1	Debating (Oral Expr. III).....	1
Industrial History (History I).....	2	Industrial History (History I).....	3
Steam Engineering (Mech. Eng. IX)...	3	Steam Engineering (Mech. Eng. IX)...	3
Applied Mechanics (Mech. Eng. X)...	5	Applied Mechanics (Mech. Eng. X), Hy-	5
Experimental Engineering a (Mech.	[2]	draulics (Mech. Eng. XI).....	
Eng. XV).....		Experimental Engineering b (Mech.	[2]
Railroad Engineering (Civ. Eng. III)..	4	Eng. XVI).....	
Drill (Mil. Sci. and T. I).....	[1]	Geology (I).....	3 [1]
		Roads and Pavements (Civ. Eng. V)...	
		Drill (Mil. Sci. and T. I).....	[1]

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II), Oratory (Oral Expr. IV).....	5	Civil Government (History II), Modern English Poetry (English V), Oratory (Oral Expr. IV).....	5
Experimental Engineering c (Mech. Eng. XVII).....	2 [2]	Experimental Engineering d (Mech. Eng. XVIII).....	[2]
Theory of Direct Currents (El. Eng. I)...	3	Bridge Design (Civ. Eng. VIII).....	[3]
Bridge Details (Civ. Eng. VI).....	[2]	Reinforced Concrete (Civ. Eng. X)....	2
Bridge Analysis (Civ. Eng. VII).....	2	Water Supply (Civ. Eng. XII).....	3
Masonry Construction (Civ. Eng. IX)...	2 [1]	Tunneling (Civ. Eng. XIII).....	1
Sewerage (Civ. Eng. XI).....	2	Contracts and Specifications (Civ. Eng. XIV).....	2
Assigned Work (Civ. Eng. XV).....	3	Assigned Work (Civ. Eng. XV).....	3
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## CHEMICAL ENGINEERING.

## Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I)....	1	Interpretive Reading (Oral Expr. I)....	1
Qualitative Analysis (Chem. III).....	[3]	General Physics (Physics II).....	4
General Physics (Physics II).....	4	Laboratory (Physics III).....	[1½]
Laboratory (Physics III).....	[1½]	Calculus, completed (Math. XI).....	5
Analytics, completed (Math. IX), Calculus (Math. X).....	5	Graphic Statics (Mech. Eng. IV).....	2
Descriptive Geometry (Mech. Eng. V)...	1 [2]	Organic Chemistry (Chem. IV).....	3 [1]
German (Ger. II).....	3	Quantitative Analysis (Chem. VII)....	[3]
Drill (Mil. Sci. and T. I).....	[1]	German (Ger. II).....	3
		Drill (Mil. Sci. and T. I).....	[1]

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern English Prose (English IV)...	2	Modern English Prose (Eng. IV).....	1
Debating (Oral Expr. III).....	1	Debating (Oral Expr. III).....	1
Industrial History (History I).....	2	Industrial History (History I).....	3
Steam Engineering (Mech. Eng. IX)...	3	Steam Engineering (Mech. Eng. IX)...	1½
Applied Mechanics (Mech. Eng. X)...	5	Organic Chemistry (Chem. VI).....	[3]
Quantitative Analysis (Chem. VIII)...	[3]	Quantitative Analysis (Chem. VIII)...	[4½]
Physical Chemistry (Chem. XII).....	3 [1]	Determinative Mineralogy (Chem. XI)..	[1½]
Reports and Discussions (Chem. XXI)...	1	Industrial Chemistry (Chem. XVI)....	4
Drill (Mil. Sci. and T. I).....	[1]	Reports and Discussions (Chem. XXI)...	1
		Drill (Mil. Sci. and T. I).....	[1]

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II), Oratory (Oral Expr. IV).....	5	Civil Government (History II), Modern English Poetry (English V), Oratory (Oral Expr. IV).....	5
Mechanism (Mech. Eng. XII).....	3	Metallurgy (Chem. XIII).....	2
Experimental Engineering a (Mech. Eng. XV).....	[2]	Industrial Chemistry (Chem. XVII)....	[3]
Theory of Direct Currents (El. Eng. I)...	3	Assaying (Chem. XVIII).....	[2]
Physical Chemistry (Chem. XII).....	3 [1]	Reports and Discussions (Chem. XXI)...	1
Reports and Discussions (Chem. XXI)...	1	Assigned Work (Chem. XX).....	3
Assigned Work (Chem. XX).....	3	Electro-Chemistry (Chem. XXII).....	3
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## Teachers' Course in Applied Science.

This course is intended to prepare persons to teach in industrial schools those branches of applied science that pertain especially to agriculture and the mechanic arts. In such schools it has been found of especial importance that the teachers be trained in an environment of current thought sympathetic with the industrial applications of science and intelligently appreciative of the methods and problems of such work. In response, therefore, to the need, and in accordance with an expressed purpose of the new fund from the United States Government, we have constructed this course. The effort has been to make the course effective for its purpose, while at the same time retaining for it that breadth and that cultural influence that are necessary to fit the whole man or woman for social life and are especially important in persons who, as teachers, will exercise large personal influence over immature youth.

The general plan of the course is the same as that of the other two courses just described. It opens to the student, at the beginning of the Junior year, three options, one of which he must select in conjunction with certain studies required of all. The tabulated course follows:

### Freshman Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I)...	2	Rhetoric and Composition (English I)...	2
German or French (I or II).....	4 or 3	German or French (I or II).....	4 or 3
Algebra (Math. I), Trigonometry (Math. II).....	5	General Chemistry and Qualitative Analysis (Chem. II).....	3 [1½]
General Chemistry (Chem. I).....	2 [1½]	General Botany (Botany I).....	1 [½]
General Botany (Botany I).....	1 [½]	Trigonometry, completed (Math. VII), Analytics (Math. VIII).....	5
Propagation of Plants (Hort. I).....	1 [1]	Drawing, Pencil (Fr. Dr. II).....	[1]
Drawing, Pencil (Fr. Dr. II).....	[1]	Drill (Mil. Sci. and T. I), Theory (Mil. Sci. and T. II); Hygiene (Home Econ. IIIa) or Physical Training.....	1 [1]
Drill (Mil. Sci. and T. I), Theory (Mil. Sci. and T. II); Hygiene (Home Econ. IIIa) or Physical Training.....	1 [1]		

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I)...	1	Interpretive Reading (Oral Expr. I)...	3
German or French (II).....	3	German or French (II).....	3 [1]
Qualitative Analysis (Chem. III).....	[3]	Organic Chemistry (Chem. IV).....	3 [1]
Economic Botany (Botany II).....	1 [½]	Physiology (Zool. III).....	3 [1]
General Zoology (Zool. I).....	2 [½]	Methods in Nature-Study (Zool. IX)...	[1½]
General Physics (Physics II).....	4	General Physics (Physics II).....	4
Laboratory (Physics III).....	[1½]	Laboratory (Physics III).....	[1½]
Drill (Mil. Sci. and T. I) or Physical Training.....	[1]	Drill (Mil. Sci. and T. I) or Physical Training.....	[1]



## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern Prose (English IV).....	2	Modern Prose (English IV).....	1
Debating (Oral Expr. III).....	1	Debating (Oral Expr. III).....	1
Industrial History (History I).....	2	Industrial History (History I).....	3
Psychology I.....	3	Drill (Mil. Sci. and T. I) or Physical Training.....	[1]
Drill (Mil. Sci. and T. I) or Physical Training.....	[1]	Elective.....	5
Elective.....	5	Options: A, B, C.	
Options: A, B, C.		All of the subjects in one of the following groups must be chosen:	
All of the subjects in one of the following groups must be chosen:		A. <i>Agriculture.</i>	
A. <i>Agriculture.</i>		Farm Crops (Agron. IV).....	3 [1]
Soils (Agron. III).....	4 [1½]	Economic Entomology (Zoöl. IV).....	3 [1]
Veg. Gardening (Hort. II) or Fruit Culture (Hort. III).....	2	Forestry (Botany IV).....	2
B. <i>Biology.</i>		B. <i>Biology.</i>	
Vertebrate Anatomy (Zoöl. VII).....	1 [2]	Histology and Embryology (Zoöl. VIII).....	2 [3]
Plant Histology (Botany V).....	1 [4]	Plant Pathology (Botany VI).....	1 [4]
C. <i>Chemistry.</i>		C. <i>Chemistry.</i>	
Quantitative Analysis (Chem. VIII)...	[3]	Organic Chemistry (Chem. VI).....	[3]
Physical Chemistry (Chem. XII).....	3 [1]	Quantitative Analysis (Chem. VIII)...	[4½]
Reports and Discussions (Chem. XXI)...	1	Mineralogy (Chem. XI).....	[1½]
		Reports and Discussions (Chem. XXI)...	1

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II), Oratory (Oral Expression IV).....	5	Civil Government (History II), Modern English Poetry (English V), Oratory (Oral Expression IV).....	5
History of Education (Education I)...	3	Principles of Education (Education II)...	2
Methods in Education (Education III)...	2	Assigned Work.....	3
Assigned Work.....	3	Drill (Mil. Sci. and T. I) or Physical Training.....	[1]
Drill (Mil. Sci. and T. I) or Physical Training.....	[1]	Options: A, B, C.	
Options: A, B, C.		All of the subjects in one of the following groups must be chosen:	
All of the subjects in one of the following groups must be chosen:		A. <i>Agriculture.</i>	
A. <i>Agriculture.</i>		Landscape Gardening (Hort. XIII)....	2 [1]
Poultry (An. Husb. XII).....	[1]	Floriculture (Hort. VI).....	1 [1]
Landscape Gardening (Hort. XIII)....	2 [1]	Farm Buildings (An. Husb. XI).....	1
Feeding (An. Husb. VI).....	3	Breeding (An. Husb. IV).....	3
B. <i>Biology.</i>		B. <i>Biology.</i>	
Plant Breeding (Agron. XI).....	3	General Zoölogy (Zoöl. II).....	1 [2]
Trees and Shrubs (Botany III).....	[1]	Entomology (Zoöl. V).....	2 [3]
Entomology (Zoöl. V).....	1 [2]	Trees and Shrubs (Botany III).....	[1]
C. <i>Chemistry.</i>		C. <i>Chemistry.</i>	
Electro-Chemistry (Chem. XXII).....	3	Mineralogy (Chem. XI).....	[1½]
Physical Chemistry (Chem. XII).....	3 [1]	Industrial Chemistry (Chem. XVI)....	4
Reports and Discussions (Chem. XXI)...	1	Industrial Chemistry (Chem. XVII)....	[3]
		Reports and Discussions (Chem. XXI)...	1

## The Course in Home Economics.

The object of the home-economics course is to fit young women for homemaking and to provide adequate training for teachers of the various household arts. Nowhere is the application of modern science to everyday life more important than in the home. In no other lifework do women find greater need of scientific knowledge and technical skill than in the intelligent and economic administration of household affairs.

The courses include instruction in the planning, sanitation, decoration, and care of the house and its administration on the economic



side; the preparation of food from the scientific and economic points of view; the study of nutrition; the discussion of problems of personal and public hygiene and instruction in the care of infants and young children. During one year instruction is given in hand sewing, machine practice, and in drafting, cutting, and making of plain garments. Although the main work is scientific and technical, the importance of artistic and literary training for home life has not been neglected. It is recognized that all the knowledge of right living to be gained through all the avenues of learning is needed to assist the student to a broader conception of citizenship as well as in performing the manifold duties of daily life.

Attention has also been given, in planning the course, to the needs of students desiring to enter special fields of domestic activity along institutional and educational lines of work.

The entrance requirements are the same as for the other college courses. Of the one hundred and sixty-five credits required for graduation, thirty-three are required in the home-economics department. Students are expected to take the course as outlined below, with choice of options; but when entered in other courses in the college, they may elect certain work in the home-economics department, under direction of the head of the department. The tabulated course follows:

### Freshman Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I).....	2	Rhetoric and Composition (English I).....	2
German or French (I or II).....	4 or 3	German or French (I or II).....	4 or 3
Algebra (Math. I), Trigonometry (Math. II).....	5	General Chemistry and Qualitative Analysis (Chem. II).....	3 [1½]
General Chemistry (Chem. I).....	2 [1½]	General Botany (Botany I).....	1 [2]
General Botany (Botany I).....	1 [2]	Drawing, Pencil (Fr. Dr. II).....	[1]
Drawing, Pencil (Fr. Dr. II).....	[1]	Physical Training.....	[1]
Physical Training.....	[1]	Domestic Art (H. Ec. I).....	[2]
Domestic Art (H. Ec. I).....	[1]	Elementary Cookery (H. Ec. II).....	1 [1]
Hygiene (H. Ec. IIIa).....	1	Euthenics (H. Ec. III b).....	1

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I).....	1	Interpretive Reading (Oral Expr. I).....	1
German or French (II).....	3	German or French (II).....	3
Qualitative Analysis (Chem. III).....	[3]	Organic Chemistry (Chem. IV).....	3 [1]
General Zoology (Zool. I).....	2 [2]	Physiology (Zool. III).....	3 [1]
Color Problems (Fr. Dr. IV).....	[1]	Descriptive Physics (Physics I).....	5
Physical Training.....	[1]	Physical Training.....	[1]
Foods (H. Ec. IV).....	3 [1½]	Foods (H. Ec. IV).....	2 [1½]
Household Management (H. Ec. V).....	2		

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern English Prose (English IV)...	2	Modern English Prose (English IV)...	1
Debating (Oral Expr. III).....	1	Debating (Oral Expr. III).....	1
Industrial History (History I).....	2	Industrial History (History I).....	3
Psychology (I).....	3	Physical Education.....	1
Physical Training.....	[1]	Physiological Chemistry (Chem. XIX)...	4
Vertebrate Anatomy (Zool. VII).....	1 [2]	Histology and Embryology (Zool. VIII)...	2 [3]
Mechanical Drawing (Mech. Eng. II)...	[1½]	History of Art (Fr. Dr. III).....	2
Human Nutrition (H. Ec. VI).....	3	Freehand Drawing (VIII).....	[1]
Home Decoration (H. Ec. VII).....	2	Dietetics (H. Ec. VIII).....	1 [1]
Elective.....	4	Sanitation (H. Ec. IX).....	2
		Elective.....	3

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II), Oratory (Oral Expr. IV).....	5	Civil Government (History II), Modern English Poetry (English V), Oratory (Oral Expr. IV).....	5
Food Analysis (Chem. X).....	[4]	Sociology.....	3
History of Education (Ed. I).....	3	Assigned Work (H. Ec. XIV).....	3 [1]
History of Art (Fr. Dr. III).....	2	Home Nursing (H. Ec. XII).....	2
Food Preservation (H. Ec. X).....	[1]	Therapeutic Cookery (H. Ec. XIII)...	1 [1]
Hygiene and Care of Children (H. Ec. XI).....	2	Elective.....	3
Elective.....	3		

## II. SHORT COURSES IN AGRICULTURE, IN MECHANIC

ARTS, AND IN DOMESTIC SCIENCE

## NOTE.

The only scholarship requirement for admission to the Short Courses in Agriculture, Mechanic Arts, and Domestic Science is a common-school education. The age for admission to these courses must be at least eighteen years. The courses lead to a certificate.

of immediate value on the farm, in the shop, or in the home.

In studies of common interest, like mathematics and English, all short-course students work together. All other instruction is of a special nature and is given in the respective departments of agriculture, mechanical engineering, and home economics. In mathematics work is begun in arithmetic, covers mensuration, gives an elementary treatment of bookkeeping, and proceeds with work of a

side; the preparation of food from the scientific and economic points of view; the study of nutrition; the discussion of problems of personal and public hygiene and instruction in the care of infants and young children. During one year instruction is given in hand sewing, machine practice, and in drafting, cutting, and making of plain garments. Although the main work is scientific and technical, the importance of artistic and literary training for home life has not been neglected. It is recognized that all the knowledge of right living to be gained through all the avenues of learning is needed to assist the student to a broader conception of citizenship as well as in performing the manifold duties of daily life.

Attention has also been given, in planning the course, to the needs of students desiring to enter special fields of domestic activity along institutional and educational lines of work.

The entrance requirements are the same as for the other college courses. Of the one hundred and sixty-five credits required for graduation, thirty-three are required in the home-economics department. Students are expected to take the course as outlined below,

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I)...	1	Interpretive Reading (Oral Expr. I)...	1
German or French (II).....	3	German or French (II).....	3
Qualitative Analysis (Chem. III).....	[3]	Organic Chemistry (Chem. IV).....	3 [1]
General Zoölogy (Zoöl. I).....	2 [2]	Physiology (Zoöl. III).....	3 [1]
Color Problems (Fr. Dr. IV).....	[1]	Descriptive Physics (Physics I).....	5
Physical Training.....	[1]	Physical Training.....	[1]
Foods (H. Ec. IV).....	3 [1½]	Foods (H. Ec. IV).....	2 [1½]
Household Management (H. Ec. V)....	2		

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern English Prose (English IV)...	2	Modern English Prose (English IV)...	1
Debating (Oral Expr. III).....	1	Debating (Oral Expr. III).....	1
Industrial History (History I).....	2	Industrial History (History I).....	3
Psychology (I).....	3	Physical Education.....	1
Physical Training.....	[1]	Physiological Chemistry (Chem. XIX)...	4
Vertebrate Anatomy (Zool. VII).....	1 [2]	Histology and Embryology (Zool. VIII)...	2 [3]
Mechanical Drawing (Mech. Eng. II)...	[1½]	History of Art (Fr. Dr. III).....	2
Human Nutrition (H. Ec. VI).....	3	Freehand Drawing (VIII).....	[1]
Home Decoration (H. Ec. VII).....	2	Dietetics (H. Ec. VIII).....	1 [1]
Elective.....	4	Sanitation (H. Ec. IX).....	2
		Elective.....	3

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II), Oratory (Oral Expr. IV).....	5	Civil Government (History II), Modern English Poetry (English V), Oratory (Oral Expr. IV).....	5
Food Analysis (Chem. X).....	[4]	Sociology.....	3
History of Education (Ed. I).....	3	Assigned Work (H. Ec. XIV).....	3 [1]
History of Art (Fr. Dr. III).....	2	Home Nursing (H. Ec. XII).....	2
Food Preservation (H. Ec. X).....	[1]	Therapeutic Cookery (H. Ec. XIII)...	1 [1]
Hygiene and Care of Children (H. Ec. XI).....	2	Elective.....	3
Elective.....	3		

## II. SHORT COURSES IN AGRICULTURE, IN MECHANIC ARTS, AND IN DOMESTIC SCIENCE.

To meet the needs of those who find it inexpedient to undertake a four-years' college course, but who, nevertheless, desire to increase their efficiency on the farm, in the home or in industrial pursuits, the college offers what are known as short courses in agriculture, in mechanic arts, and in domestic science.

At present each of these courses is of two-years' duration. They are in no case supposed to serve as a substitute for the regular work of the college, in character or scope of the subject-matter presented, and do not lead, directly or indirectly, to a degree. Neither are they to be considered as preparatory to the college work. Their particular function is to give, in the shortest, most direct way possible, certain definite, specific, and perhaps uncorrelated information which will be of immediate value on the farm, in the shop, or in the home.

In studies of common interest, like mathematics and English, all short-course students work together. All other instruction is of a special nature and is given in the respective departments of agriculture, mechanical engineering, and home economics. In mathematics work is begun in arithmetic, covers mensuration, gives an elementary treatment of bookkeeping, and proceeds with work of a



more advanced character as far as the capabilities of the class will permit. The greatest stress is laid upon the analysis and solution of many practical problems from the farm, the factory, and from daily life. In English the object is to develop the power of clear analysis and expression by continued drill in grammar and composition, based upon readings in industrial or political history.

The special work in agriculture treats in an elementary way of such subjects as plant life, soils and fertilizers, vegetable gardening, stock judging, crops, dairy practice, poultry, fruit culture, etc. The course in domestic science gives practical instruction in the care of the house, foods, plant life, physical training, home management, etc. The engineering department offers work in the various forms of shop work, draughting, mechanical movements, and practical information in regard to the construction and operation of engines, boilers, and pumps.

Short-course work is of comparatively recent introduction at this institution, and consequently is still in the process of development. It is hoped to increase the effectiveness of each of the above phases of the work at as early a date as possible by more completely separating them from one another and from other lines of instruction; also, particularly in agriculture and engineering, by a re-adjustment of the time in such a way as to accommodate a greater number of men desiring to take the course. For example, it is proposed to give the agricultural matter in three winter terms of twenty-four weeks each rather than in two years of thirty-six weeks each, the idea being that the shorter period would enable a larger number of practical farmers to attend. In engineering the problem is somewhat different. Its proposed solution is as follows:—Demands for definite, special training, as for a dynamo tender or a stationary engineer, may be met by making the courses of instruction largely special or elective. In order that irregular periods of freedom from regular duties may be employed for study, and that each individual's progress may depend only on his own exertions and ability, it is proposed to conduct this department as an ungraded school. This plan should possess the attractions and possibilities of the usual correspondence courses, and be far superior to them in the opportunities for personal instruction and laboratory practice. According to this arrangement, a student might enter at any time and take any one or group of the following subjects: English grammar, and composition based on the technical work; arithmetic and mensuration; mechanical drawing; forge shop;



pattern making; machine shop; mechanical movements; elementary discussion of power-plant machinery; elementary electricity; electrical wiring. The tabulated courses follow:

## Agriculture.

### First Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (A).....	5	Elementary English (A).....	5
Arithmetic (Math. F.).....	5	Arithmetic (Math. F.).....	5
Plant Life (Botany A).....	1 [2]	Plant Life (Botany A).....	1 [2]
Elementary Zoölogy (A).....	3 [1½]	Soils, Fertilizers (Agron. A).....	3 [1]
Breeds and Care (An. Husb. A).....	2	Vegetable Gardening (Hort. A).....	2 [1]
Stock Judging (An. Husb. B.).....	[2]	Benchwork (Woodwork I).....	[1½]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

### Second Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (B).....	5	Elementary English (B).....	5
Bookkeeping (Math. G).....	4	Plant and Animal (Chem. A).....	3 [1]
Plant and Animal (Chem. A).....	3 [1]	Farm Management (Agron. C).....	3
Crops and Rotations (Agron. B).....	3	Breeding (An. Husb. E).....	2
Dairy Practice (An. Husb. C).....	[1]	Poultry (An. Husb. F).....	1 [1]
Stock Feeding (An. Husb. D).....	2	Fruit Culture (Hort. B).....	2
Fruit Culture (Hort. B).....	2	Farm Buildings (Woodwork H).....	[1]
Nursery Practice (Hort. C).....	1 [1]	Farm Machinery (Agron. D).....	[2]
Drill (Mil. S. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## Mechanic Arts.

### First Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (A).....	5	Elementary English (A).....	5
Arithmetic (Math. F).....	5	Arithmetic (Math. F).....	5
Mechanical Drawing (Mech. Eng. I)...	[3]	Mechanical Drawing (Mech. Eng. I)...	[3]
Forge and Foundry (Mech. Eng. II)...	[3]	Pattern Making (Mech. Eng. III)...	[3]
Machine Shop (Mech. Eng. VII).....	[3]	Machine Shop (Mech. Eng. VII).....	[3]
Mechanical Movements (Mech. Eng. D)...	3	Mechanical Movements (Mech. Eng. D)...	3
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

### Second Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (B).....	3	Elementary English (B).....	3
Bookkeeping (Math. G).....	4	Algebra (Math. H).....	5
Mechanical Drawing (Mech. Eng. VI)...	[3]	Mechanical Drawing (Mech. Eng. VI)...	[3]
Machine Shop (Mech. Eng. XIV).....	[3]	Machine Shop (Mech. Eng. XIV).....	[3]
Engineering Theory (Mech. Eng. E)...	5	Engineering Theory (Mech. Eng. E)...	5
Elementary Physics (A).....	3	Elementary Physics (A).....	3
Drill (M. S. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## Domestic Science.

### First Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (A).....	5	Elementary English (A).....	5
Arithmetic (Math. F).....	5	Arithmetic (Math. F).....	5
Plant Life (Botany A).....	1 [2]	Plant Life (Botany A).....	1 [2]
Elementary Zoölogy (A).....	2 [2½]	Floriculture.....	[2]
Household Technique (Dom. Sci. A)...	[1]	Foods (Dom. Sci. C).....	3 [1½]
Sewing (Dom. Sci. B).....	[1]	Physical Training.....	[1]
Physical Training.....	[1]		

## Second Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (B).....	3	Elementary English (B).....	3
Bookkeeping (Math. G.).....	4	Algebra (Math. H).....	5
Plant and Animal (Chem. A).....	3 [1]	Plant and Animal (Chem. A).....	3 [1]
English History (History A).....	3	English History (History A).....	3
Dietetics (Dom. Sci. D).....	3 [1½]	Management of House (Dom. Sci. E)...	1
Physical Training.....	[1]	Hygiene (Dom. Sci. F).....	1
		Textiles (Dom. Sci. G).....	[1½]
		Physical Training.....	[1]

## III. SPECIAL POULTRY COURSE.

For many years this college has offered a winter course in the poultry industry. In fact, the first poultry course to be offered in the United States was offered here eleven years ago. The college will continue to offer a course during the winter term.

## Requirements for Admission to the Degree Courses.

### UNITS.

The requirements for admission are reckoned in units. A "unit" represents the successful completion of a year's study of a subject, to which have been devoted not less than one hundred and twenty recitation periods of sixty minutes each, or their equivalent (*e. g.* one hundred and eighty periods of forty minutes each). For the year 1910-11 the minimum number of thirteen units will be required; and for the year 1911-12, fourteen units. A student may obtain this amount of entrance credit from high-school work or from examination.

### GROUPS.

The entrance subjects are divided into two groups, A and B. Those in A, with one exception—solid geometry—are required of all candidates for admission.

### GROUP A.

The school year is reckoned at thirty-six weeks, the minimum length.

English.....	108 weeks.....	3 units.
German or French.....	36 weeks.....	1 unit.
Algebra.....	54 weeks.....	1½ units.
Geometry, Plane.....	36 weeks.....	1 unit.
Geometry, Solid—for engineering students only, 18 weeks.....		½ unit.
Physics.....	36 weeks.....	1 unit.
History.....	36 weeks.....	1 unit.

The remainder of the thirteen units must be taken from

#### GROUP B.\*

No subject is accepted for more than the amount here stated or for less than two-fifths of a unit.

Foreign Language.....	216 weeks.....	6 units.
Geometry, Solid—for other than engineering students, 18 weeks.....		$\frac{1}{2}$ unit.
Botany.....	36 weeks.....	1 unit.
Chemistry.....	36 weeks.....	1 unit.
Geology.....	18 weeks.....	$\frac{1}{2}$ unit.
Physiography.....	36 weeks.....	1 unit.
Physiology.....	18 weeks.....	$\frac{1}{2}$ unit.
Zoölogy.....	36 weeks.....	1 unit.
History.....	36 weeks.....	1 unit.
Drawing.....	36 weeks.....	1 unit.
Domestic Science.....	18 weeks.....	$\frac{1}{2}$ unit.
Shop Practice.....	18 weeks.....	$\frac{1}{2}$ unit.
Farm Practice.....	18 weeks.....	$\frac{1}{2}$ unit.

#### METHODS OF ADMISSION.

On any or all of the subjects named in both groups satisfactory standing from any reputable high school will be accepted in lieu of examination, on presentation of a copy of the student's full record in the high school, showing clearly the nature of the work pursued in each subject, time devoted to it, and grade of work done. This copy must be duly signed by the proper official of the school, and must be accompanied by a certificate of good moral character. The latter, however, may be from any reputable source. On application, blanks showing definitely the full nature of the information desired from the high school will be furnished.

Candidates not presenting satisfactory standing from reputable high schools will be examined, over ground corresponding to the number of points attached, on all the subjects of Group A and on such of Group B as they may offer. Examinations for entrance will be held at the close of the college year in June, and also at the opening in September, as announced in the calendar, page 11.

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\* Other subjects not here named will receive due consideration if presented on the application blank, with a statement of the work done.

## SPECIFICATIONS OF GROUND TO BE COVERED.\*

## GROUP A.

These subjects, with the exception stated, are required of all students to the extent indicated by the number of units designated in each case.

## Languages.

ENGLISH, 3 UNITS.—In English two aims are sought: first, a knowledge of the language—including the acquisition of an ample vocabulary and power of effective expression—second, some acquaintance with the literature. To attain the first, grammar and composition must be thoroughly studied. Throughout the secondary-school course there should be much practice in writing along a variety of lines suggested by the pupil's experience, his general interests, and studies other than English. Spelling, punctuation, accuracy of idiom, should receive due attention in all written work; while correct and forceful oral expression should also be insisted upon.

To meet the requirement in literature certain selections are to be made from two lists of works—one for reading, the other for closer study. It is hoped to foster in this way a taste for good books and an intelligent appreciation of them. Committing to memory selected passages and reading aloud are strongly urged. In all cases some knowledge of the author's life and his place in literature should be acquired, while a more exacting study of selected texts would lay emphasis on form and style, meaning of particular words and phrases, and the significance of allusions. The list of books prescribed for 1910-11 will be sent on application, or may be obtained from the nearest high-school principal.

GERMAN, 1 UNIT.—During the first year the work should consist of drill in pronunciation, the rudiments of grammar, writing from dictation, simple composition and conversation, and the reading of from 100 to 175 pages of easy prose and poetry.

FRENCH, 1 UNIT.—The course in French should parallel that in German. During the first year there should be drill in pronunciation, the rudiments of grammar, writing from dictation, simple composition and conversation, and the reading of from 100 to 175 pages of easy prose and poetry.

## Mathematics.

ALGEBRA,  $1\frac{1}{2}$  UNITS.—The requirement in algebra comprises the four fundamental operations; factoring, highest common factor and lowest common multiple; fractions; linear equations; exponents; radicals; quadratic equations; simultaneous equations involving quadratics; binomial theorem for positive integral exponents. Problems should be given at frequent intervals in the work.

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\* For any or all of the subjects described below the requirements of the College Entrance Examination Board, upon which these specifications are largely based, will be accepted. A circular stating these requirements in detail and blank forms of application for examination may be obtained by sending ten cents in stamps to the College Entrance Examination Board, Post Office Sub-Station 84, New York City.



PLANE GEOMETRY, 1 UNIT.—This requirement is met by the usual theorems and constructions of standard text-books, numerous originals, and applications.

SOLID GEOMETRY,  $\frac{1}{2}$  UNIT.—The ground is covered by the usual theorems and constructions of standard text-books, originals, and applications.

### Science.

PHYSICS, 1 UNIT.—This course should consist of classroom work based on a standard text-book, accompanied by lecture-table demonstrations, and by numerous practical problems. A parallel course in individual laboratory work is desirable, but is not absolutely required. In the case of laboratory work, one hour of credit will be allowed for each two hours spent in the laboratory.

### History, 1 unit.

The requirement in history will be met by presenting any one of the following subjects: ancient history, especially Greek and Roman, with the chief events of the early Middle Ages to the death of Charlemagne (814); medieval and modern European history from 814 to the present time; English history; American history and civil government.

### GROUP B.

From this group units are to be taken, in addition to those of Group A, sufficient to make up the whole number required. Any combination of units, including fractions not less than two-fifths, will be allowed. †

### Languages.

GERMAN, 2 OR 3 UNITS.—The requirement for one unit is indicated under Group A. One unit will also be allowed for second and one each for third and fourth year work. During the second year the course should be a continuation of the first as regards grammar, composition, and conversation. The reading should consist of at least 200 pages of such texts as Arnold's *Fritz auf Ferien*, Wildenbruch's *Das Edle Blut*, Mosher's *Willkommen in Deutschland* and Benedix' *Der Prozess*. Third-year study should emphasize reading and advanced composition. Suitable texts are Riehl's *Der Fluch der Schönheit*, Freytag's *Bilder aus der deutschen Vergangenheit*, Lessing's *Minna von Barnhelm*, Schiller's *Wilhelm Tell*, and Heine's *Die Harzreise*. The fourth-year's work should mark a decided advance in the mastery of vocabulary and idiom as shown both in speaking and writing. The works read may be made the basis for themes. The following reading matter is suggested: Freytag's *Soll und Haben*, Fulda's *Der Talisman*, Hauff's *Lichtenstein*, Scheffel's *Ekkehard*, Schiller's *Wallenstein*, *Maria Stuart*, or *Geschichte des dreissigjährigen Krieges* (Book III), Dahn's *Ein Kampf um Rom*, Goethe's *Dichtung und Wahrheit* (Books I-IV).

FRENCH, 2 OR 3 UNITS.—The requirement for one unit is indicated under Group A. One unit will also be allowed for second and one each for third and fourth year work. Throughout the second year the course should be a continuation of the first as regards grammar, composition, and conversation. At least 250 pages of such texts as Bruno's *La Tour de la France*, Malot's *Sans Famille*, Mérimée's *Colomba*, and Sarcey's *Le Siège de Paris* should be read. In the third year emphasis should be laid on reading. Some time ought also to be given to advanced composition. Among suitable texts may be mentioned Racine's



*Athalie*, Corneille's *Le Cid*, Molière's *Le Bourgeois Gentilhomme*, Sandeau's *Mademoiselle de la Seiglière*, Vigny's *La Canne de Jonc*, Hugo's *La Chute*. From the fourth-year's study increased facility in conversation and composition should be gained, and any modern French, other than technical, should be read with ease. Such texts as the following are recommended: the prose works of Dumas père, Hugo's *Ruy Blas*, La Fontaine's *Fables*, Sainte-Beuve's *Essays*, Taine's *Origines de la France Contemporaine*, Pellissier's *Mouvement Littéraire au XIXe Siècle*. At least 600 pages should be read.

**LATIN, 1 TO 4 UNITS.**—A credit of one unit will be given for each year's work in Latin, covering in all a standard beginners' book, four books of Cæsar's Gallic War, six orations of Cicero, and six books of Virgil's *Æneid*. It is expected that work in prose composition and sight reading will be included in each subject.

## Mathematics.

**SOLID GEOMETRY,  $\frac{1}{2}$  UNIT.**—See Group A. For other than engineering students.

## Science.

**BOTANY, 1 UNIT.**—The preparation in botany should include individual laboratory work recorded by notes and diagrammatic drawings. Field work is desirable, and should also be accompanied by notes. The notebook and drawings certified by the teacher should be presented at the time of application for entrance credit. The year's course of study should consist of three parts, viz.: 1. The general principles of the anatomy, morphology, physiology, and ecology of seed plants. 2. The natural history of the plant groups. The structure, reproduction, and adaptations to habitat of one or two types from each group should be studied. 3. Classification. A brief study of the subdivisions of the above groups. Ability to determine species of flowering plants is not essential. Any standard text-book covering the above field may be used.

**CHEMISTRY, 1 UNIT.**—An elementary text-book, such as Williams's *Elements of Chemistry* by Brownlee and Others, should be covered by recitations. At least one exercise per week must be devoted to individual work in the laboratory. The pupil must perform forty or more experiments, such as are described in the Report of the College Entrance Examination Board, 1909, and keep a notebook in which he describes the apparatus used, records the phenomena observed, and states the conclusions in his own words, in each experiment.

**GEOLOGY,  $\frac{1}{2}$  UNIT.**—In geology a study of the following subjects should be made: rock-forming minerals, their names and chemical constituents; earthquakes—their cause and effects; volcanoes—distribution, types, character of eruption, nature of erupted material; supposed physical state of the earth's interior; surface agencies destructive to rocks, with brief illustrations; processes of reconstruction, with illustrations; rocks—classification, according to origin, rock fracture and dislocation, rock structure due to erosion, metamorphic rocks, mineral veins and their method of formation; conditions determining land sculpture; the geological periods, with land elevations, and the characteristics of climate, plant and animal life of each period.

**PHYSIOGRAPHY, 1 UNIT.**—This course should include a consideration of the earth as a globe, the atmosphere, the waters of the earth, the lands, life upon the earth, and the reactions between these elements. Special attention should be given to the questions of climate, the winds, the weather, tides, ocean currents, and to the effect of the ocean in modifying climatic conditions. Attention should be directed to the manner in which the land was originally formed and to the way in which the original formation has been and is being modified by the action of erosion, the winds, and frost. Throughout the course consideration should be given to the manner in which the various physical characteristics of the earth have affected life upon its surface.

**PHYSIOLOGY,  $\frac{1}{2}$  UNIT.**—The text-book work should cover material equivalent to that of Martin's Human Body or Hough and Sedgwick's Human Mechanism. In addition the applicant should present a notebook showing laboratory work upon the elementary physiological processes and general structure of mammals.

**ZOOLOGY, 1 UNIT.**—The work should include: 1. The general natural history of a number of common vertebrates and invertebrates common to the locality where the work is given. 2. The classification of these forms into phylum, class and order, with the characteristics of the several groups. 3. The main anatomical features of one vertebrate, two arthropods (one an insect); an annelid, preferably the earthworm, a coelenterate, two protozoans (*Amoeba* and *Paramoecium* recommended). 4. The general physiology of the above types involving digestion, absorption, circulation, excretion and nerve function. These should be compared with the same functions in the human body. 5. The following subjects should be brought before the student in connection with the foregoing studies: asexual and sexual reproduction, alternation of generations, regeneration, fertilization and segmentation of egg cells; adaptation; variations, evidences of relationship between similar groups, the cell structure of animals.

Certified notebooks must be presented which include notes upon work and discussion in classroom and drawings of the forms dissected.

### History, 1 unit.

See Group A.

### Drawing, 1 unit.

This may be either freehand or mechanical. If freehand drawing is offered, the candidate should submit at least fifteen drawings, the majority to be in pencil, certified as his work by the instructor. These should show ability to sketch from various objects with considerable accuracy of proportion and clearness of line, and a fair understanding of the rules of perspective and light and shade as applied in freehand sketching. A candidate may also present the equivalent of five hours per week for one year in elementary mechanical drawing, lettering or sketching from models.

### Domestic Science, 1-2 unit.

In domestic science the student must present satisfactory evidence of knowledge in the following subjects: the use and care of the kitchen equipment, general cleaning processes, the marketable forms of staple foods. She must also show credit for at least twelve cooking laboratory lessons of two hours each.

### Shop Practice, 1-2 unit.

The candidate may offer carpentry or any of the various forms of bench-work given in a well-equipped manual training school equivalent to five hours per week for one-half year.

### Farm Practice, 1-2 unit.

By "farm practice" is meant familiarity with the operations of the farm, such as the harnessing of teams, the use of tillage implements, and the care of dairy animals.

### Degrees.

The degree of Bachelor of Science is conferred upon a student who has completed one of the four-year courses outlined on pages 18-27. The degree of Master of Science is conferred upon those holding a Bachelor's degree from this institution, in regular order, or from other institutions having equal requirements, upon the completion of one year of resident study, the presentation of a satisfactory thesis in applied or economic science, and upon passing examinations in the subjects pursued. Candidates not graduates of this college must file with the committee on graduate study, not later than October first, a detailed statement of their previous work certified by the proper authorities. They must select, not later than November fifteenth, a major and a minor subject which must be closely related and have the approval of the committee on graduate study and of the professor in whose department the principal work is done. Major subjects may be selected in any of the following departments: agriculture; botany; chemistry; zoölogy; home economics; electrical, mechanical, and civil engineering. The minor may be selected from undergraduate subjects outlined in the catalogue; the major, however, must be advanced work specially arranged with the individual professor. The thesis must be typewritten upon paper of the size and quality prescribed, and two copies must be in the hands of the president not later than June first.

The requirement for the degree of Mechanical Engineer, Electrical Engineer, or Civil Engineer, consists of three years of successful professional practice subsequent to the Bachelor's degree, one of which must have been in a responsible position; the presentation of an acceptable thesis; and the passing of examinations upon the investigations involved in the preparation of the thesis.

A registration fee of five dollars is charged for an advanced degree. Students from outside the state pay a tuition fee of thirty dollars during the year of residence. The cost of a diploma is five dollars.







WOMEN'S DORMITORY—DAVIS HALL.



## Teachers' Certificates.

The following resolution adopted by the Board of Education of this state is self-explanatory: "The certification of the president (of this college) that an applicant for a teacher's certificate has pursued a secondary school course of four years, subject to the approval of the committee on qualifications, and in addition thereto has pursued a four years' collegiate course in the Rhode Island College will be received as evidence of the required qualifications in scholastic subjects for a teacher's certificate of the first grade."

## Opportunities Offered to Women.

The course in home economics is especially designed for women, although all other courses are open to them. Special waiting and study rooms are provided for the women who are day students. For statement of accommodations for boarding students, see page 39.

## Expenses.

Tuition is free to residents of Rhode Island. To non-residents of the state, tuition is \$15.00 a term or \$30.00 a year.

The regular college expenses are tabulated as follows:

Board, \$3.75 per week.....	\$135 00
Room-rent, including heat and light.....	30 00
Incidental fee, \$4.50 per term.....	9 00
Laboratory deposit, \$5 per term.....	10 00
Uniform for military drill, estimated.....	16 00
	<hr/>
	\$200 00

The first four items must be paid quarterly in advance; that is to say, \$46.00 will be required at the opening of the year, September 21, 1910, and also at each of the following dates: November 28, 1910, February 15, 1911, and April 17, 1911. Non-residents of the state should add to this sum \$7.50 for tuition each quarter. In order to secure dormitory accommodations, the student is required to deposit one dollar with the application, the dollar to be credited on the fall-term room-rent. If the student fails to take the room, the dollar is forfeited. The uniform also must be paid for at the opening of the

college year in advance. Against the laboratory deposit will be charged all material used in the various laboratories, and the destruction, breakage, or marring of apparatus and tools. If anything remains after such deductions have been made, the said remainder will be refunded. If, on the other hand, the charges shall at any time exceed the deposit, the student will be required to cover the excess by a further deposit.

Nothing has been said concerning books. The probable cost of these will be from \$15.00 to \$30.00 per year. For miscellaneous expenses connected with college life, students should add a sum varying from \$10.00 to \$25.00. A fee of 50 cents will be charged for each second examination to make up a condition. Graduates pay the cost of diplomas, \$5.00. *No diplomas will be issued until all term bills have been paid.* Room-rent and incidental deposit will not be refunded on withdrawal during the quarter. Students not taking any laboratory work will not be required to make a laboratory deposit. An athletic tax levied by the students upon themselves will be taken at the college office at the times set for college dues.

UNIFORM.—Every able-bodied male student is required to drill and to wear a uniform. The uniform must be paid for immediately on entering the college, when the students are measured for the suits. When worn only on drill and properly cared for, one uniform may last two or more years. The student may, however, wear his uniform all the time.

TRANSPORTATION.—The college conveys students daily to and from the railroad station free of charge. Once at the beginning and end of each term, a team conveys trunks to and from the station.

BOARDING STUDENTS.—The price of board for 1910–11 will be \$3.75 per week. Students who *leave regularly every week* on Friday afternoon and return Monday morning will pay \$2.75 per week. No person will be admitted to the dining-room until he has secured from the bursar a meal ticket, on the back of which will be found the rules governing the holder of such ticket. After this ticket is issued, all charges for board will be made in accordance therewith unless the student has the ticket changed by the bursar. Arrangement of charges for meals sent to students' rooms for any cause must be made in advance.

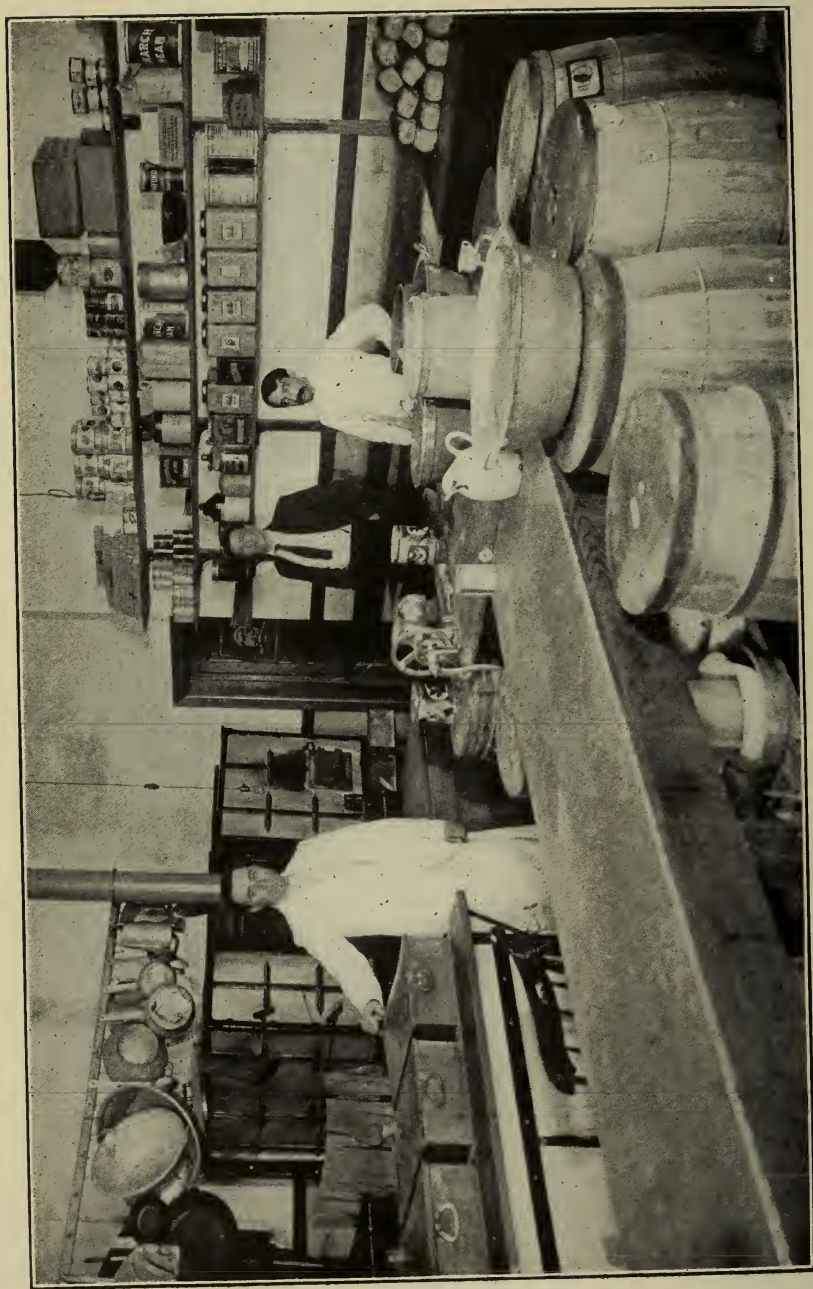


DINING ROOM—EAST HALL.









KITCHEN—EAST HALL.

**DORMITORIES FOR MEN.**—The new dormitory building called East Hall is now in use, affording excellent accommodations for men students. The two upper floors are entirely devoted to rooms for students. The sanitary conveniences on each floor are excellent and ample, including a full complement of shower baths. The first floor contains a large assembly hall, a handsome social room for the men, and a dining-room and kitchen fitted out with all modern equipment. The old boarding hall, now called South Hall, is also devoted to the use of the young men and affords very desirable rooms for dormitory purposes.

**DORMITORY FOR WOMEN.**—During the summer of 1909, the interior of Davis Hall was entirely reconstructed. On the first floor are the administration offices. With the exception of the offices of the extension department on the second floor, the upper floors of the building are utilized for the women's department. The accommodations for women students in this building are under the direct supervision of a dean, and compare favorably with those at any women's college in the country. There is a neat hospital, with all necessary adjuncts. The oversight of the young women is efficient, kindly, and painstaking. Attention is especially invited to the new facilities and arrangements for the welfare of young women.

**FURNITURE.**—The rooms in the women's dormitory are provided with necessary furniture, including mattresses, but no other bedding material. *All students in the men's dormitory are required to supply their own furniture and bedding.* The necessary furniture may be obtained at the college when desired. A room may be furnished for from \$8.00 to \$10.00. Iron bedsteads three feet wide are included under room-rent. The furniture, if properly kept, may be sold, when the student leaves, for one-half to three-fourths the original price. All students should bring with them such articles as sheets, blankets, pillow, pillow-slips (all for single bed), and towels. Men students are required to purchase mattresses at the college.

**ROOMS IN THE VILLAGE.**—Arrangements have been made for rooms in the village of Kingston, some of these being under college management and others in private houses. In the case of the former, room-rent will vary from 60 cents to \$1.00 per week, with heat and light furnished, the student to provide other furnishings. Furnished rooms in private houses for students who occupy them throughout the college year range from \$1.25 to \$2.00 per week.

COLLEGE STORE.—Students will be required to pay cash at the store for all books and other supplies.

DAMAGE FUND.—All damage not due to ordinary wear will be assessed to students as follows:

1. Students at once acknowledging damage and agreeing to pay for same will be assessed actual cost of repair, including labor.
2. Students found guilty of such damage but not acknowledging and settling for the damage will be charged double the cost of repair.
3. Students will be responsible for damage in their own rooms.
4. Damage that is not settled as above may be assessed to all the students or to a group of students, pro rata. Each case and the amount of assessment will be considered on its merits.

### Employment at the College.

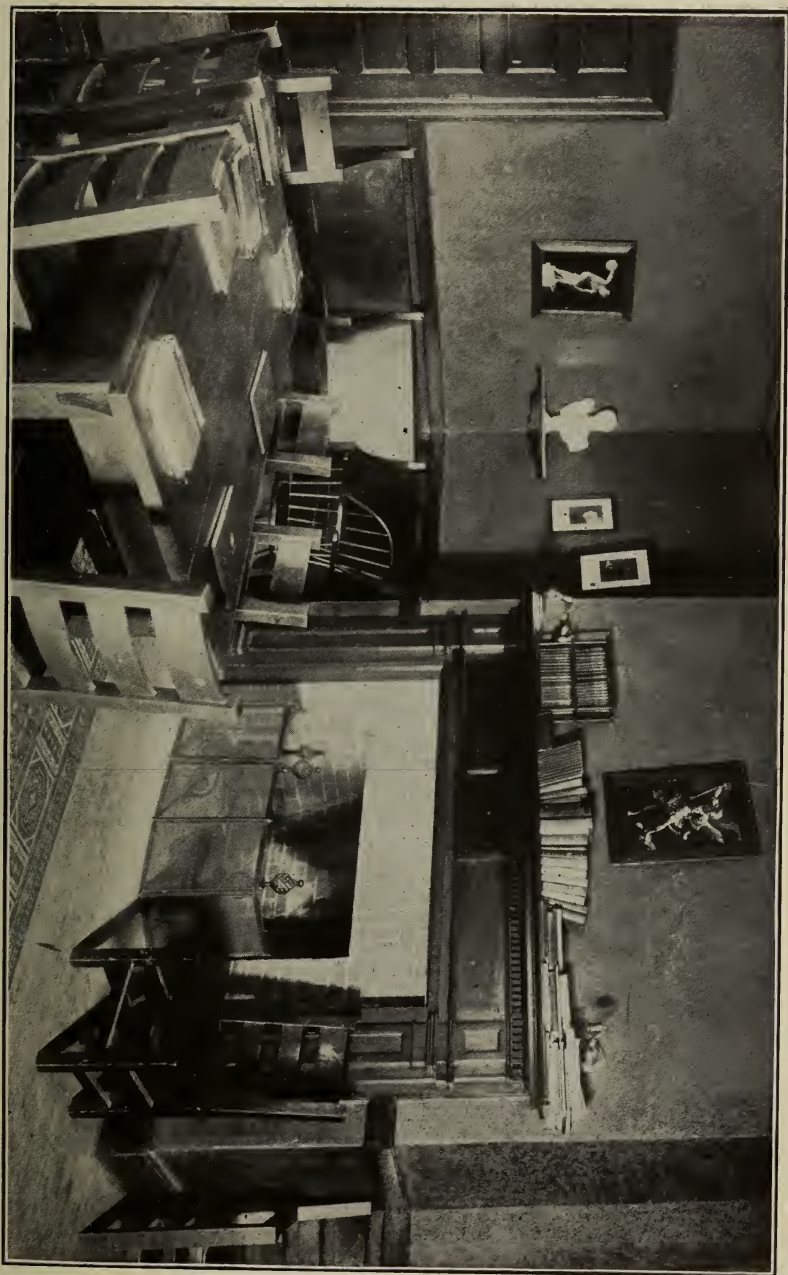
There is a certain amount of labor about the college buildings, on the farm, at the experiment station, and in the offices and laboratories, for which students will be employed whenever it is feasible to do so. Industrious students frequently earn an amount which aids considerably in paying their expenses,—a sum varying from \$25.00 to \$125.00 per year.

In view of the fact, however, that the amount of this work is strictly limited and that it is not the policy of the college to create such work, and, furthermore, because of the increasing number of students and the more frequent applications for student labor, it seems desirable to state the conditions under which this work will hereafter be assigned.

1. Application for work must be made on a blank which will be issued to the student on request. *Persons desiring such work must, if under age, bring a statement certifying to what extent the student must depend upon himself for support.* It must be borne in mind that the student can not make this certification for himself. Application for work, however, under no circumstances creates a claim on the college that work shall be assigned the applicant.

2. At a certain time before the opening of the fall term all applications for work will be considered, and appointments will be made after due consideration of





SOCIAL ROOM—EAST HALL.









STUDENT'S ROOM—EAST HALL.

- (a) Capability for the work.
- (b) Trustworthiness.
- (c) Good record as a student.
- (d) Need for financial aid.

[NOTE: Other things being equal, preference will be given to residents of the state, to upper-class students, and to those who room and board at the college.]

- 3. Such appointments are subject to revocation at any time, for
  - (a) Incompetency.
  - (b) Unfaithfulness in discharge of duty.
  - (c) Misconduct or disloyalty to the institution.
  - (d) Bad record in studies.
- 4. Such appointments must be recognized as
  - (a) A mark of trust and responsibility.
  - (b) A real and vital part of one's training for promptness, for initiative, and for leadership.
  - (c) One of the very best criteria the teacher has in determining his estimate of the student's character, both for his own guidance and for recommendation to employers.

5. Payment for services will vary from ten to fifteen cents per hour, according to the grade and difficulty of the work and the experience of the student. In general, students should not expect more than ten cents an hour for the first year. It is a rule of the college that any student desiring to perform more than twenty hours of student labor per week must secure permission from the faculty council. In the future, it may be necessary to limit the amount which any one student may receive for student labor.

Some young people have the impression that the college offers such opportunities for self-help that it is safe to enter with practically no funds, relying solely on money earned while here. In exceptional cases this may be done, but prospective students are strongly advised not to enter until they have at least \$100.00 at their disposal. A student who has to make his own way must also plan to work steadily during both the short and long vacations. Occasional vacation work at the college can be furnished to students, but as a rule they should look elsewhere for this class of work.

## Religious Influences.

This college is a state institution, and, consequently, the widest latitude is given to all creeds and forms of religious belief. Simple chapel exercises are held, and are conducted by the president or some other member of the faculty. While in the main attendance is not compulsory, it is desired and expected that all students will attend chapel. On one day of each week special exercises are held which all are required to attend.

A branch of the Intercollegiate Young Men's Christian Association is doing active work among the men students, holding a meeting every Sunday throughout the year. This association conducts courses in bible study, and is taking the lead in endeavoring to establish sound and high ideas of college life.

The Young Women's Christian Union is doing a similar work for the young women.

The village church cordially invites all students to attend its services and, if possible, to join its membership. Every effort is made by the college to minister to the higher life of the students and to bring before them the noblest ideals, without in any way attempting to coerce them to particular beliefs.

During the past winter a vesper service has been held at five o'clock on Sunday afternoon either at the college or in the village church. At this service a speaker from abroad has been often present.

## The College Lecture Association.

Faculty and students, uniting with residents of the vicinity, conduct a winter lecture course, the aim of which is to introduce talented speakers upon subjects both entertaining and instructive. The association may be looked upon as a permanent and important factor in college activities. For the season of 1909-1910 the following program was secured:

- Nov. 20. Mr. Charles Battell Loomis, Author Recital.
- Dec. 20. The Trunette Concert Company of New York.
- Feb. 3. Mr. Phidelah Rice, of Boston, in *THE PEACEFUL VALLEY*.
- Feb. 15. Dr. J. Everist Cathell, of Baltimore, *ABRAHAM LINCOLN*.
- Mar. 16. Mr. Herbert Keightly Job, of New Haven, *HUNTING WITH THE CAMERA*.
- April 8. The Rhode Island State College Glee Club.





CHAPEL—EAST HALL.









IN THE LIBRARY.

## The Kingston Prize.

For some years the sum of sixty dollars has been offered annually by a friend of the college to encourage literary work among the students. The contest in 1909 was a debate upon the proposition, "*Resolved*, That the tariff should be gradually reduced to a non-protective basis in 1919." Warren Henry, Robert Winthrop Cummings, and John Ira Hardy argued in favor of the proposition; while James Francis Nugent, Walter John Moran, and Richard Howes Wheeler attacked it. The first prize, of \$25.00, was awarded to Mr. Henry as the best individual speaker; the second price, of \$20.00, to Mr. Wheeler. The affirmative was declared the winning side and received the team prize of \$15.00.

## The Library.

The library occupies a large room in Lippitt Hall, and numbers over seventeen thousand volumes. The books are arranged in stacks, to which the students have free access. The Dewey system of classification is used; and a dictionary catalogue gives author, title, and subject entries. As the library has been from the first intended for reference work, the various departments of instruction have made their selections with the greatest care. Combined with the library is the reading-room, where one hundred and twenty of the leading periodicals—of literary, scientific, and general interest—are on file. From time to time these are bound, and prove of great value in reference work.

Since the library has been a government depository twenty-five hundred books and pamphlets have been received, which are of value in scientific investigation and research.

The library is open every week day from 7:30 A. M. to 6:00 P. M., with the exception of an hour at noon. The librarian or her representative is in constant attendance to aid any one in search of information. As the college is an institution designed to further the educational interests of Rhode Island, all residents of the state are at liberty to use its library.

## Location.

The college campus is one and one-half miles from Kingston station, which is at the junction of the main line of the N. Y., N. H. & H. R. R. with the Narragansett Pier branch, thus insuring excellent railroad accommodations. The buildings are on a hill which commands an extended view of the surrounding country—a location both healthful and beautiful. Sixteen trains stop daily at the station, so that the college is accessible from Providence or from New York City at almost any hour in the day. The ride from Providence is about forty to forty-five minutes in length. From New York the time is some four hours.







SOILS LABORATORY.

## Departments of Instruction.

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The following subjects are offered in the different departments. All subjects in the departments of instruction preceded by a Roman numeral count towards the degree of B. S. All subjects preceded by a capital letter lead to a certificate.

### Agriculture.

PROFESSOR ADAMS, PROFESSOR COLEMAN, MR. BURDICK, MR. COBB,  
MR. MALLETT, MR. LAMBERT, MR. WHITING.

The instruction given in this subject is grouped under the three heads—agronomy, animal husbandry, and horticulture. The aim is to give such theoretical and practical training in the fundamentals of agriculture as will enable those who take this work to fill positions of trust and responsibility, either as owners of their own farms, managers of estates, or along other lines of agricultural activity.

That the graduates from this department may be fitted to take up the work as outlined above, all students registering for a degree in agriculture will be required to show a certain familiarity with the ordinary operations of the farm before such degree is given. In order that those students who come from the cities and towns, and are not familiar with the practical operations of the farm, may receive training in this work, opportunity for such instruction will be offered by the different departments during the college year. No college credits will be given for such work. As a rule, however, it will be much better for the students to spend one or two summers upon farms in order to get this training than to attempt to obtain the proficiency necessary by working only at the college during the college year. Persons taking practical work upon farms during the summer vacations will be required to furnish a certificate from their employers stating the time spent on the farm and the kind and amount of work accomplished. Special attention must be given

to that branch of agriculture which the student is to elect during the Senior year.

### AGRONOMY.

PROFESSOR ADAMS, MR. BURDICK.

The instruction in agronomy begins the first term of the Sophomore year, when a study is made of the forage plants. Following this work are subjects dealing with the other field crops and their uses as food for man and beast. In the work with soils and fertilizers, especial emphasis is placed upon the problems connected with the proper use of chemical manures.

The business side of farm life is given attention in the subjects treating of farm equipment and management. Work with farm machinery is a laboratory course, in which the students are taught how to care for, repair, and operate modern farm machinery. In the Senior year there is instruction in plant breeding, a subject which is of the utmost importance to one who would make the most of the opportunities in crop production. Instruction in agricultural experimentation deals largely with the application of the results which have been obtained by the experiment stations, to the practical problems of the farm.

The equipment of the department includes the college farm and barns; also the farm machinery, consisting of a good line of tillage implements, fertilizer distributors, grain drill, and harvesting machinery. A well-equipped blacksmith shop is also provided.

Students have the advantage of the field experiments which are being conducted by the experiment station upon fertilizer problems and with various rotations.

### Subjects.

II. Forage Crops.—History and development of the plants used for forage; silage, methods of construction of silos. *Two recitation credits per week, first term. Required of Sophomores in Agriculture.*

III. Soils and Fertilizers.—Origin and constituents of soils; texture, moisture, drainage, methods of tillage. Farm manures, artificial manures, composition and use; formulas for various crops. *Four recitation and one and one-half laboratory credits per week, first term. Required of Juniors in Agriculture. Option for Juniors in Applied Science.*

IV. Farm Crops.—Origin and history; production and place in the rotation of clovers, grasses, and root crops. *Three recitation and one laboratory credits per week, second term. Required of Juniors in Agriculture. Option for Juniors in Applied Science.*

VI. Farm Machinery.—Development of farm machinery, methods of construction, function, and operation. *Two recitation and one laboratory credits per week, second term. Required of Juniors in Agriculture. Mr. Burdick.*

VII. Farm Management.—Discussion of agricultural methods, choice of a farm, capital, marketing, types of farming, accounts. *Two recitation credits per week, second term. Required of Juniors in Agriculture.*

VIII. Farm Management (advanced).—Individual problems of farm management are assigned. Abandoned farms will be visited and a critical study made of the existing conditions. *Two recitation credits per week, first term. Option for Seniors in Agriculture.*

IX. Literature.—History of agricultural and horticultural literature; a study of the different types of agricultural literature as illustrated by ancient and modern authors. Reports upon special topics. *Two recitation credits per week, second term. Option for Seniors in Agriculture.*

X. Agricultural Experimentation.—Objects, methods, and results of agricultural experimentation. A study of federal and state aid to agriculture as shown in the work of the United States Department of Agriculture and the Experiment Stations. *Three recitation credits per week, first term. Required of Seniors in Agriculture.*

XI. Plant Breeding.—A discussion of the development of plants under cultivation; with reference to heredity, environment, variation, and selection. *Three recitation credits per week, first term. Required of Seniors in Agriculture. Option for Seniors in Applied Science.*

A. Soils and Fertilizers.—An elementary course upon the origin and nature of soils. Fertilizers; natural and artificial manures; preparation and use; fertilizer arithmetic. *Three recitation and one laboratory credits per week, second term. Required of Short-Course students in Agriculture, first year.*

B. Crops and Rotations.—Methods of culture and uses of the grasses, clovers, cereals, and root crops. Rotation for the various types of farms. *Three recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.*

C. Farm Management.—An elementary course upon the principles of farm management, equipment, cost of production. *Three recitation credits per week, second term. Required of Short-Course students in Agriculture, second year.*

D. Farm Machinery.—Care and repair of farm implements. *Two laboratory credits, second term. Required of Short-Course students in Agriculture, second year. Mr. Burdick.*



## ANIMAL HUSBANDRY.

PROFESSOR COLEMAN, MR. BURDICK, MR. LAMBERT, MR. WHITING.

Instruction in animal husbandry is so arranged as to furnish practical as well as theoretical instruction in the selection, care, and management of the live stock on the farm. Instruction commences in the second term of the Freshman year, with a study of the breeds, their care, and judging of types. These courses aim to provide a large amount of practical work in combination with the theoretical. In the Junior year attention is directed to dairying; and in the Senior year the work includes advanced judging, the management of pure-bred herds, flocks, and studs, and the scientific study of feeding farm live stock.

Instruction in poultry culture is given during the second term of the Freshman year, and is both theoretical and practical. In the Senior year an option is offered in advanced poultry judging. The equipment is particularly strong on the poultry side. The college poultry plant enables one to obtain a large amount of practical experience in incubation, brooding, and management. In addition to the poultry in the college yards, the students have opportunity to follow the investigations which are now being conducted by the experiment station. In addition to the subjects mentioned below, there is a six-weeks' course in poultry keeping during the winter months, full information concerning which may be obtained by addressing the president of the college.

## Subjects.

I. Stock Judging.—Scoring and comparison of various types of horses, cattle, sheep, and swine. Study of the special purpose or special type animal. *Two laboratory credits per week, second term. Required of Freshmen in Agriculture.* Professor Coleman.

II. Advanced Judging.—Practice in judging and detail study of types. Herd testing methods. Tracing of pedigrees. *Two laboratory credits per week, first term. Option for Seniors in Agriculture.* Professor Coleman.

III. Breeds.—History and character of the principal breeds of farm animals. Study of conditions to which each is adapted. *Two recitation credits per week, second term. Required of Freshmen in Agriculture.* Professor Coleman.

IV. Principles of Breeding.—A study of the science and art of breeding. Discussion of the laws of heredity as applied to improvement of animal types. *Three recitation credits per week, second term. Required of Seniors in Agriculture. Option for Seniors in Applied Science.* Professor Coleman.

V. Management of Pure-Bred Herds, Flocks, and Studs.—Selection of foundation stock. Housing, feeding, and care. Advertising, fitting for sale and show ring. *Two recitation credits per week, second term. Option for Seniors in Agriculture.* Professor Coleman.

VI. Feeding Farm Animals.—Principles of animal nutrition. Feeding standards. Making up balanced rations. *Three recitation credits per week, first term. Required of Seniors in Agriculture. Option for Seniors in Applied Science.* Professor Coleman.

VII. Dairy Practice.—Lectures and laboratory practice in Babcock test and in handling milk and making butter on the farm. *One recitation and one and one-half laboratory credits per week, first term. Required of Juniors in Agriculture.* Mr. Burdick.

VIII. Dairy Practice.—Advanced work. Pasteurization. Starters. Testing for adulteration. Acidity. Moisture. *One recitation and one laboratory credit per week, second term. Option for Seniors in Agriculture.* Mr. Burdick.

IX. Research and Literature.—*Hours to be arranged, first term. Option for Seniors in Agriculture.* Professor Coleman.

X. Veterinary Medicine.—Combating disease from the farmer's standpoint. Obstetrics. Injuries. *Three recitation credits per week, second term. Required of Seniors in Agriculture.* Mr. Whiting.

XI. Farm Buildings.—Plans, location, and estimate on the various farm buildings. *Two laboratory credits per week, second term. Option for Juniors in Agriculture, and Seniors in Applied Science.*

XII. Poultry Craft.—A brief study of breeds, care, and management of all classes of fowls. *One laboratory credit per week, second term. Required of Freshmen in Agriculture.* Mr. Lambert.

XIII. Judging Poultry.—Practice in scoring and judging all classes of fowls. *Two laboratory credits per week, second term. Option for Seniors in Agriculture.* Mr. Lambert.

A. Breeds and Care.—Breeds of horses, cattle, sheep, and swine. Housing, care, and management of farm animals. *Two recitation credits per week, first term. Required of Short-Course students in Agriculture, first year.* Professor Coleman.

B. Stock Judging.—Judging of the various classes of animals and their adaptability to different purposes, as cattle for milk or beef production, horses for driving or draft. *Two laboratory credits per week, first term. Required of Short-Course students, first year.* Professor Coleman.

C. Dairy Practice.—Babcock test for dairy products, production of sanitary milk, and butter making. *One laboratory credit per week, first term. Required of Short-Course students in Agriculture, second year.* Mr. Burdick.

D. Stock Feeding.—Principles of nutrition. Compounding rations. *Two*

*recitation credits per week, first term. Required of Short-Course students in Agriculture, second year. Professor Coleman.*

E. Principles of Breeding.—A study of the selection of animals, heredity, and variation. *Two recitation credits per week, second term. Required of Short-Course students in Agriculture, second year. Professor Coleman.*

F. Poultry Breeds and Care.—A study and comparison of the different breeds of poultry, care of incubators and brooders, methods of feeding for the production of meat and eggs. *One recitation and one laboratory credit per week, second term. Required of Short-Course students in Agriculture, second year. Mr. Lambert.*

## HORTICULTURE.

MR. COBB.

The aim of the instruction in horticulture is to help the student to understand the practical and scientific problems which arise in the various lines of work included under this subject.

The headquarters of the department are in the horticultural building. The main building contains the office and recitation rooms, together with photographic rooms. Attached to this building are greenhouses of modern construction, containing over 8,000 square feet under glass, 3,000 square feet of which is used by the experiment station for fertilizer experiments. The remainder is devoted to college work, and thus affords an excellent opportunity to become familiar with the growth of plants under glass. The land devoted to the department comprises the college gardens; and the fruit orchards, containing over 150 varieties of fruit, which afford an excellent opportunity for the study of apples and pears especially. There is also a small vineyard. A collection of flowering shrubs enables the student in landscape gardening to study, in the natural state, the material used in this work.

### Subjects.

I. Propagation of Plants.—Different methods, including seed testing. Soft, green, and hardwood cuttings. Layering, grafting, and budding. *One recitation and one laboratory credit per week, first term. Required of Freshmen in Agriculture and Applied Science.*

II. Vegetable Gardening.—Underlying principles and types of vegetable gardening; study of individual crops; text-book work. *Two recitation credits per week, first term. Required of Sophomores in Agriculture. Option for Juniors in Applied Science.*

III. Fruit Culture.—Fundamental principles of orcharding; soil, fertilizers, and cultivation. Methods of laying out orchards and planting. Tillage, pruning, and spraying. Harvesting and storing fruits. Collateral reading and practical work. *Two recitation credits per week, first term. Required of Juniors in Agriculture.*

IV. Spraying and Pruning.—Preparation and application of spray mixtures; insecticides and fungicides. Methods of application for different orchard enemies, and machinery used. Pruning of trees and ornamental shrubs. *One recitation and one laboratory credit per week, second term. Required of Freshmen in Agriculture.*

V. Greenhouse Construction and Management.—Study of the different types of glasshouse structures; methods of heating and ventilating. *One recitation and two laboratory credits per week, second term. Option for Seniors in Agriculture.*

VI. Floriculture.—History of floriculture. Study of greenhouse plants, collectively and individually; practical work in propagation, potting, watering, ventilating, fumigating, and spraying. Study of bulbs, bedding plants; palms and ferns. *One recitation and one laboratory credit per week, second term. Option for Seniors in Agriculture and Applied Science.*

VIII. Literature of Horticulture.—See Agronomy IX.

IX. Assigned Work.—Special subjects chosen by the student. *Option for Seniors in Agriculture. Hours to be arranged.*

X. Varieties of Fruits.—Orchard and bush fruits. Study of types; origin, and history; classification, description, and methods of handling. Orchard management. *Two recitation and one laboratory credits per week, first term. Option for Seniors in Agriculture.*

XI. Advanced Vegetable Gardening.—Study of one or more crops selected by student. Practical work, research work, and text-book. *One recitation credit per week, first term. Option for Seniors in Agriculture.*

XII. Plant Breeding.—See Agronomy XI.

XIII. Landscape Gardening.—Origin, history, and underlying principles. Practical work in the laying out of grounds, formation of walks and drives; methods of planting for different effects; home planting. Study of shrubs and trees used in landscape gardening. *Two recitation and one laboratory credits per week, throughout the year. Required of Seniors in Agriculture. Option for Seniors in Applied Science.*

A. Vegetable Gardening.—Fundamental principles of vegetable growing. Practical work in cold frames, hotbeds, and garden planting. *Two recitation and one laboratory credits per week, second term. Required of Short-Course students in Agriculture, first year.*

B. Fruit Culture.—Study of fruits; propagation; planning fruit gardens and plantations; harvesting and packing; care. *Two recitation credits per week, throughout the year. Required of Short-Course students in Agriculture, second year.*



C. Nursery Practice.—Propagation by seed, cuttings, grafting, budding, starting, and care of nursery. Selection of stock, and initial pruning. *One recitation and one laboratory credit per week, first term. Required of Short-Course students in Agriculture, second year.*

D. Floriculture.—Propagation of flowering plants, care of window gardens, design of flowerbeds and borders. *Two laboratory credits, second term. Required of Short-Course students in Home Economics, first year.*

## Botany.

PROFESSOR MERROW.

The aim of the department is to give a general knowledge of plant life, followed by subjects of an economic nature. The college is well located for carrying on this line of work. The native flora is extensive, and an abundance of material is furnished by the cultivated plants of the gardens and fields of the college farm. The greenhouses supply fresh material for winter use, and the herbarium of 4,300 specimens is a useful reference collection. The laboratory is equipped with dissecting and compound microscopes, a microtome, paraffin bath, and simple physiological apparatus. Charts and models are provided for lecture demonstrations. A good working library, including several American and foreign periodicals, is an important factor in the outfit for botanical instruction.

## Subjects.

I. General Botany.—A study of common plants, their structure, physiology, evolution, and adaptation to environment. The work includes a brief study of molds, yeasts, and bacteria, designed as an introduction to problems in which these organisms play a part. *Two laboratory credits and one recitation credit per week, throughout the year. Required of Freshmen in Agriculture, Applied Science, and Home Economics.*

II. Economic Botany.—The systematic botany of crops and weeds. *Two laboratory credits and one recitation credit per week, first term. Required of Sophomores in Agriculture and Applied Science.*

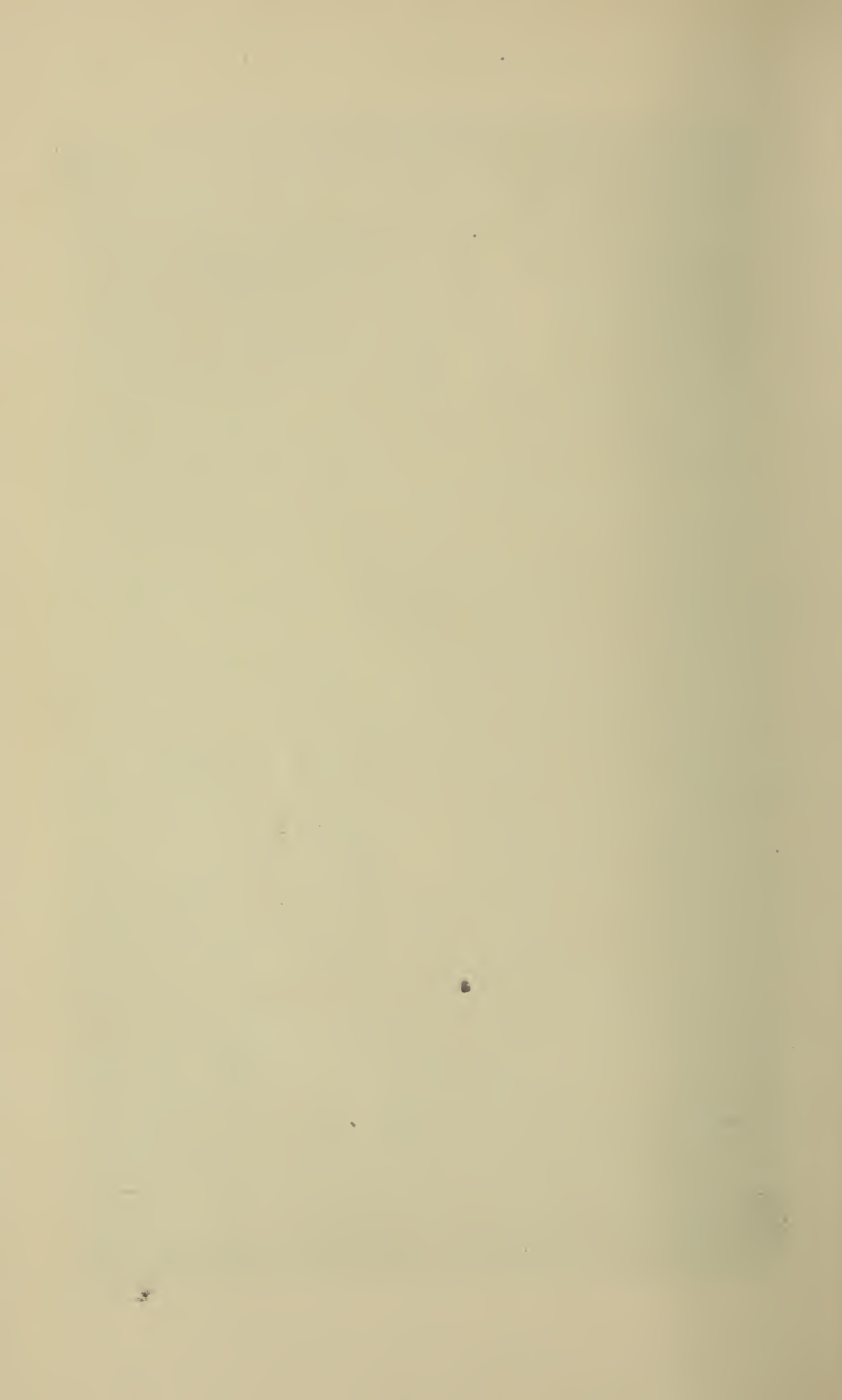
III. Trees and Shrubs.—The determination of native and introduced trees and shrubs in summer and winter condition. *One laboratory or field credit per week, throughout the year. May be elected by students having a minimum of six credits in Botany.*

IV. Forestry.—The management of a southern New-England wood lot. *Two credits per week, second term. Required of Juniors in Agriculture. Elective in Applied Science. Mr. Bishop.*





BOTANICAL LABORATORY.



V. Histology.—Seed plants are studied by the usual histological methods of imbedding, sectioning, and staining. *Four laboratory credits and one recitation credit per week, first term. Elective.*

VI. Pathology.—Diseases caused by parasitic fungi and the remedies for them. *Four laboratory credits and one recitation credit per week, second term. Elective.*

VII. Assigned Work.—*Three credits, throughout the year. Elective for Seniors in Applied Science.*

A. Plant Life.—Elementary agricultural botany. *Two laboratory credits and one recitation credit per week, throughout the year. Required of Short-Course students in Agriculture and Domestic Science, first year.*

## Chemistry.

DR. LEIGHTON, MR. SMITH, DR. HARTWELL.

Instruction in this department begins in the Freshman year with experimental lectures, recitations, and laboratory practice in general and descriptive chemistry. The work is designed to give a thorough elementary knowledge of theoretical and descriptive inorganic chemistry, including the principal technical processes, and a brief account of the carbon compounds. As much attention as is practicable in a general course is given to the applications of the science to the problems of life. Two periods per week for the first half-year and three for the second half-year are devoted to the lectures and recitations, and three hours per week for a half-year to the practical work in the laboratory, where the student has an opportunity to verify some of the chemical theories and to become familiar with substances and their chemical behavior. During the second half of this year the laboratory period is devoted to qualitative analysis, which continues through the first half of the Sophomore year. The subject is taught in part by means of recitations and lectures, but mainly by work in the laboratory. Students are required to complete a systematic course in basic and acid analysis, and to analyze correctly a number of alloys, salts, and minerals.

Quantitative analysis is taught mainly by laboratory practice, but sufficient time is devoted to lectures and recitations to teach thoroughly the fundamental principles involved. The work comprises gravimetric and volumetric analysis, and the quantitative determination of salts, alloys, ores, minerals, and commercial and food products.

In the course in technical gas analysis the student analyzes such gases as air, and illuminating and chimney gases. The work in assaying is designed to familiarize the student with the practical methods of sampling and assaying gold, silver, and lead ores. Determinative mineralogy, which includes blowpipe analysis and crystallography, is taught by recitations and laboratory work. The student learns the physical properties of the common minerals, and their identification. The above subjects cover a comprehensive study of analytical chemistry, and are intended to give the student such theoretical and practical knowledge as to prepare him for analytical work of any kind.

The study of organic chemistry begins with a short course, designed to cover the general principles and methods, and to include a description of the more important compounds. The subject is continued by those who wish to specialize in chemistry in a more extended course covering the aromatic series and the chemistry of the dyestuffs, and accompanied by laboratory work in organic preparations and analysis. The theoretical and basic principles of chemistry, with their general application, are thoroughly studied by recitations, lectures, and laboratory work in the course in physical chemistry.

The descriptive side of industrial chemistry, which comprises a general survey of the technical applications of chemical principles to the arts and industries, is studied by recitation work; while practical technical operations, such as textile coloring, suited to the needs of the individual student, are studied by laboratory practice. The principles and practice of the industrial preparation of iron, steel, and other metals from their ores are taught by recitation and lecture work in the course in metallurgy.

Agricultural chemistry, required of agricultural students in the Junior year, embodies the chemistry of soils and fertilizers, also the chemistry involved in the changes which take place during the growth of animals and plants, as well as in the storage or manufacture of the ordinary farm products.

Subject XXI is intended to familiarize the student with the general field of chemical literature, and to inculcate the habit of keeping up with the recent advance in chemical science by reports and discussion of articles appearing in the chemical journals. This course is preparatory for Subject XX, which involves original investigation.

The laboratory is supplied with water, gas, and compressed air at

each desk; it is also well equipped with apparatus for the subjects mentioned below. Among the more important pieces of apparatus are a polariscope, microscope, sodium press, hot-air engine, five analytical balances, one assay balance, filter press, Wheatstone bridge, combustion furnace, bomb furnace, assay muffle, crucible and roasting furnaces, ore crusher and grinder.

A good working library, containing a large number of German, French, and English chemical journals, is also accessible.

### Subjects.

I. General Chemistry.—*Two recitation and one and one-half laboratory credits per week, first term. Required of Freshmen in all courses. Mr. Smith.*

II. General Chemistry and Qualitative Analysis.—*Three recitation and one and one-half laboratory credits per week, second term. Required of Freshmen in all courses. Dr. Leighton.*

III. Qualitative Analysis.—Basic and acid analysis; analysis of salts, industrial and natural products. *Three laboratory credits per week, first term. Required of Sophomores in all courses. Dr. Leighton and Mr. Smith.*

IV. Organic Chemistry.—*Three recitation and one laboratory credits per week, second term. Required of Sophomores in Chemical Engineering, Home Economics, Agriculture, and Applied Science. Elective for others who have completed Chemistry III. Mr. Smith.*

V. Organic Chemistry (advanced).—*To be given alternate years. Given next in 1911. Three recitation and one laboratory credits per week, first term. Required in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry IV.*

VI. Organic Chemical Laboratory.—*Three laboratory credits per week, second term. Required of Juniors in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry IV. Mr. Smith.*

VII. Quantitative Analysis.—Gravimetric and volumetric analysis. Analysis of minerals, ores, alloys, and industrial products. *Three laboratory credits per week, second term. Required of Sophomores in Chemical Engineering. Elective for others who have completed Chemistry III. Mr. Smith.*

VIII. Quantitative Analysis.—*Three laboratory credits per week, first term; four and one-half laboratory credits per week, second term. Required of Juniors in Chemical Engineering and Juniors who take the Chemical Option in Applied Science. Elective for those who have completed Chemistry III. Mr. Smith.*

X. Quantitative analysis.—Food Analysis. *Four laboratory credits, first term. Required of Seniors in Home Economics. Elective for others who have completed Chemistry IV. Dr. Leighton.*



XI. Determinative Mineralogy.—*One and one-half laboratory credits per week, second term. Required of Juniors in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry III.* Mr. Smith.

XII. Physical Chemistry.—*To be given alternate years. Given next in 1910. Three recitation and one laboratory credits per week, first term. Required in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry III.* Dr. Leighton.

XIII. Metallurgy.—*Two recitation credits per week, second term. Required of Seniors in Chemical Engineering. Elective for others who have completed Chemistry II.* Mr. Smith.

XIV. Agricultural Chemistry.—*Three recitation and one laboratory credits, first term. Required of Juniors in Agriculture.* Dr. Hartwell.

XV. Gas Analysis.—*See Mechanical Engineering XV.*

XVI. Industrial Chemistry.—*Four recitation credits per week, second term. Required of Juniors in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry IV.* Mr. Smith.

XVII. Industrial Chemistry.—*The work under this subject may be varied to suit the needs of individual students; including such subjects as technical analysis and textile coloring. Three laboratory credits per week, second term. Required of Seniors in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for those who take Chemistry XVI.* Dr. Leighton.

XVIII. Assaying.—*Two laboratory credits per week, second term. Required of Seniors in Chemical Engineering.* Mr. Smith.

XIX. Physiological Chemistry.—*Four credits per week, second term. Required of Juniors in Home Economics.* Dr. Leighton.

XX. Assigned Work.—*Three credits per week, throughout the year. Required of Seniors in Chemical Engineering and those who take the Chemical Option in Applied Science.* Dr. Leighton.

XXI. Reports and Discussion of Chemical Subjects and Recent Investigations.—*One credit per week, throughout the year; required of Juniors and Seniors in Chemical Engineering. Option for Juniors and Seniors in Applied Science.* Dr. Leighton.

XXII.—Electro-Chemistry. *Three recitation credits, second term. Required of Seniors in Chemical Engineering and of those who take the Chemical Option in Applied Science.* Dr. Leighton.

A. Chemistry of Plant and Animal Life.—*Three recitation and one laboratory credits per week, throughout the year. Required of Short-Course students in Agriculture and Home Economics, second year.* Dr. Leighton.

## Freehand Drawing.

MISS ELDRED.

The aim of the subjects described below is to supply the practice in drawing necessary for subsequent work in the science laboratories, to give an elementary knowledge of the history of art, and to develop some appreciation of the beautiful in art and nature. For the first term, the work comprises outline drawing in pencil, mainly from plant and animal forms. The work of the second term includes some consideration of perspective and of the principles of design. In the first term of the Sophomore year the home-economics students consider the subject of color,—the principles of color harmony, and the use of color in design and decoration. The object of this work is to develop appreciation of color and to enable the student to exercise a more intelligent and sensitive discrimination in its use. In the Junior year, special work is arranged for the first term to accompany and illustrate the home-economics course, treating of the arrangement and decoration of the house. The brief course in the history of art aims to give some familiarity with the greatest achievements of past and present in architecture, sculpture, and painting. The department has a considerable equipment of illustrative material for this work, including a collection of about one hundred and fifty casts and over three hundred photographs of folio or larger size, with many smaller prints, among them two thousand University Prints, illustrating Greek and Roman sculpture, and the art of Italy, Germany, and the Netherlands.

### Subjects.

II. Pencil Drawing from Objects.—*One laboratory credit per week, first term. Required of Freshmen in Agriculture. One laboratory credit per week, throughout the year. Required of Freshmen in Applied Science and Home Economics. Five laboratory credits per week, first term. Elective for Freshmen.*

III. History of Art.—*Two credits per week, second term. Required of Juniors in Home Economics. Two credits per week, first term. Required of Seniors in Home Economics.*

IV. Color Problems.—*One laboratory credit per week, first term. Required of Sophomores in Home Economics.*

V. Drawing in Charcoal from Still Life and the Cast.—*Two laboratory credits per week, second term. Elective.*

VI. Pen-and-Ink Drawing, Water-Color, or Pastel.—*Two laboratory credits per week, second term. Elective.*

VII. Modeling.—*Two laboratory credits per week, second term. Elective.*

VIII. Work Illustrating Home Economics VII.—*One laboratory credit, second term. Required of Juniors in Home Economics.*

## Economic and Social Science.

PRESIDENT EDWARDS.

### Subjects.

I. Political Economy.—Text-book, supplemented by lectures, readings, and essays. *Five recitation credits per week, first term, first twelve weeks. Required of Seniors in all courses.*

II. Agricultural Economics.—The study of agriculture as an industry, from the point of view of political economy. Includes a study of the agricultural market; transportation of agricultural products; agricultural labor; farm ownership and tenancy; mortgages, etc. *Elective.*

III. Rural Sociology.—Movements of the farm population—causes and results; general social conditions of farmer, such as illiteracy, health, crime, etc.; personal and social traits developed by rural life; means of communication in rural communities; the rural school; agricultural education; the country church; farmers' organizations; federation of rural social forces. *Elective.*

## Home Economics.

PROFESSOR THOMPSON.

The aim of this department is to give both theoretical and practical training in the economic administration of the home. The laboratory is situated in a building by itself, which is finished and furnished in such a manner as to demonstrate the sanitary principles involved in proper kitchen arrangements. It is amply equipped with the most recent scientific cooking-apparatus, inclusive of thermometers, metric scales, different kinds of stoves, and individual utensils. The work in chemistry, biology, etc., is, however, carried on in the laboratories of those departments. There is a good home-economics library, and students are expected to make intelligent use of the main library in reference work, as well as to study those bulletins of the Department of Agriculture and such state reports as deal particularly with the subjects of food and nutrition.

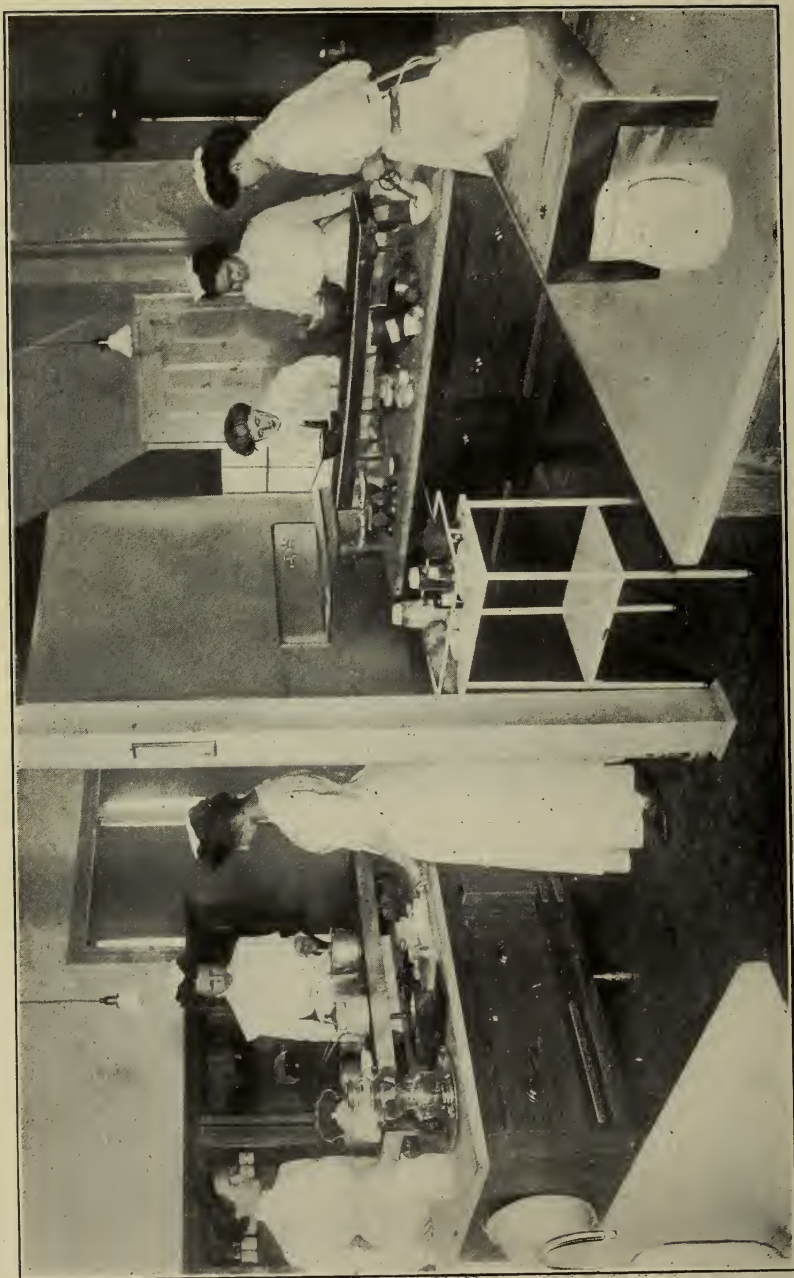
FRESHMAN CLASS IN SEWING.











HOME ECONOMICS LABORATORY.

## Subjects.

I. Domestic Art.—A course in hand sewing; different kinds and combinations of stitches; drafting and cutting of patterns; machine practice; study of charts and tailoring systems; making of two undergarments and an unlined dress. *One laboratory credit per week, first term; and two laboratory credits per week, second term. Required of Freshmen in Home Economics.*

II. Elementary Cookery.—The economic use of fuels; the management of stoves and ranges; the study of cooking temperatures and processes; the care of utensils; practice in the cookery of a few typical foods. *One recitation and one laboratory credit per week, second term. Required of Freshmen in Home Economics.*

III a. Personal Hygiene.—This course considers the aim of personal hygiene as the maintaining of the most efficient human machine for the life needs of the individual. It endeavors to give and establish ideals of health and efficiency. *One recitation credit per week, first term. Required of all women Freshmen.*

III b. Euthenics.—The following topics are considered: environment of human life; problems of adaptation to modern conditions and progress; personal aim; individual responsibility; factors in human efficiency. *One recitation credit per week, second term. Required of all women Freshmen.*

IV. Foods.—A systematic study is made of the food constituents, their sources, chemical composition, properties, nutritive and economic values. This course is accompanied by laboratory practice in the preparation of many representative foods. Class demonstrations are given from time to time. *Three recitation and one and one-half laboratory credits per week, first term; two recitation and one and one-half laboratory credits per week, second term. Required of Sophomores in Home Economics. Prerequisites: Chemistry I, II, Home Economics II.*

V. Household Methods and Management.—Lectures and discussions upon general housework, the principles of laundering, marketing, apportionment of income, maintenance of standards, household administration, social, legal, industrial and educational problems of the family. *Two recitation credits per week, first term. Required of Sophomores in Home Economics.*

VI. Human Nutrition.—Composition of the animal body and its daily food requirements; methods of investigation employed in studying the nutritive function of foods; the changes effected by cooking and by the processes of digestion; balancing of dietaries; food economy. *Three recitation credits per week, first term. Required of Juniors in Home Economics. Prerequisites: Chemistry IV, Zoölogy III, Home Economics II, IV.*

VII. Home Decoration.—A study of the evolution of the house; its adaptation to modern conditions; the principles to be followed in planning, furnishing, and decorating the house from a sanitary and artistic standpoint. *Two recitation credits per week, first term. Required of Juniors in Home Economics.*

VIII. Dietetics.—Problems in nutritive ratios; the balanced dietary; hygienic combinations of foods; construction of menus; adaptation of the diet to age,

occupation, and different climatic conditions. *One recitation and one laboratory credit per week, second term. Required of Juniors in Home Economics. Prerequisite: Home Economics VI.*

IX. Sanitation.—This course deals with household and public hygiene. Study of soils and drainage; house construction; heating, lighting, ventilation, and plumbing; water supply, sewage disposal, food infection. *Two recitation credits per week, second term. Required of Juniors in Home Economics. Prerequisites: Chemistry I, II, Botany I, Physics I.*

X. Food Preservation.—Study of the processes of decomposition, fermentation, and putrefaction; practice in preserving foods by drying, salting, and sterilization; preparation of jelly, pickles, and canned fruits; discussion of commercial preservatives. *One laboratory credit per week, first term. Required of Seniors in Home Economics. Prerequisite: Home Economics IX.*

XI. Hygiene and Care of Children.—A study of the physical development of children; care of infants and young children; school hygiene. *Two recitation credits per week, first term. Required of Seniors in Home Economics. Prerequisite: Psychology. Open to Juniors and Seniors in other courses.*

XII. Home Nursing.—Care of the sickroom and patient; administration of medicines; recording of symptoms; accidents and emergencies; hygiene of infectious diseases; antiseptics and disinfectants. *Two recitation credits per week, second term. Required of Seniors in Home Economics. Prerequisite: Home Economics IX.*

XIII. Therapeutic Cookery.—This course includes the study of abnormal conditions of digestion and metabolism, relation of food to specific diseases, cookery for the sick and convalescent. *One recitation and one laboratory credit per week, second term. Required of Seniors in Home Economics. Prerequisites: Home Economics IV, VI, VIII, X.*

XIV. Assigned Work.—This may be a problem in the biological, chemical, physiological, or economic aspect of the work in Home Economics. *Three recitation and two laboratory credits per week, second term. Required of Seniors in Home Economics.*

XV. Teaching of Home Economics.—Purpose and method of the work; courses of study, equipment, etc. *One recitation credit per week, second term. Elective for Seniors in Home Economics.*

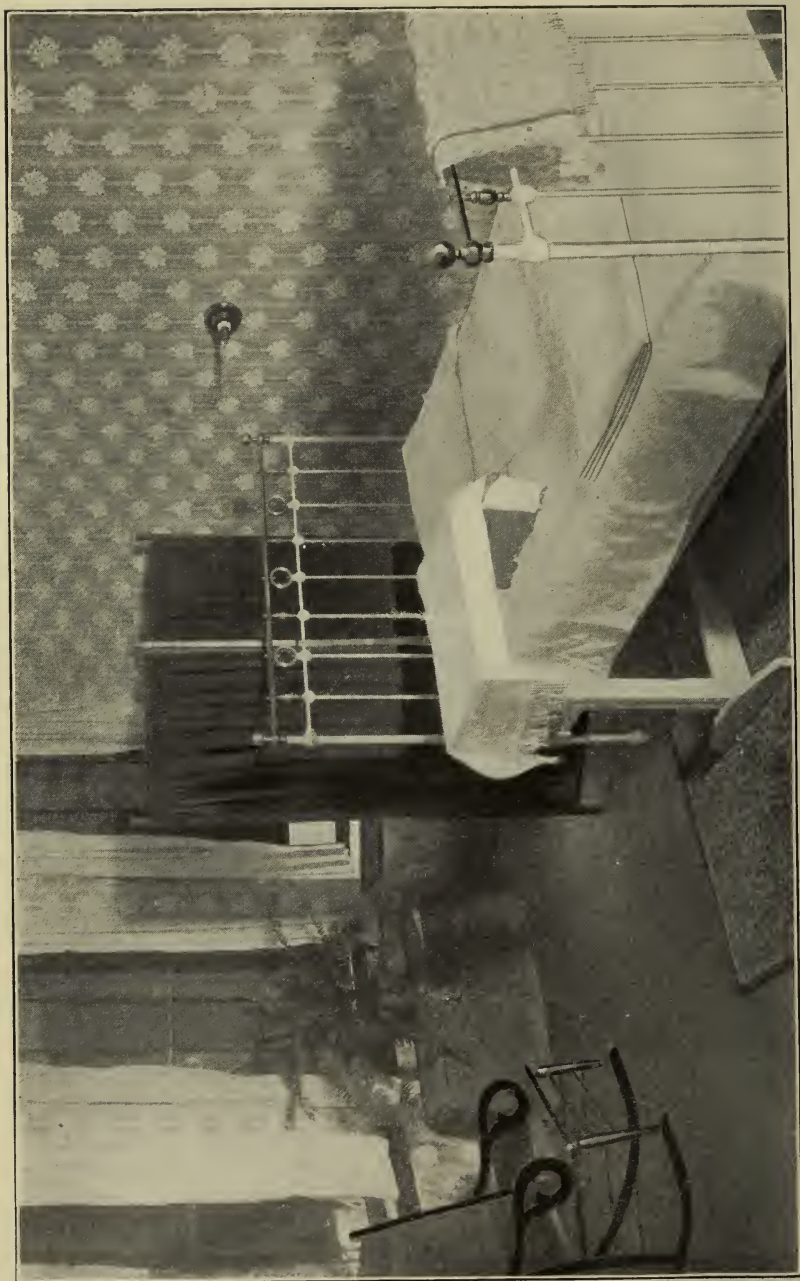
XVI. History of Home Economics.—Development of home-economics movement; a study of the work as presented in different types of institutions, and its industrial, educational, and sociologic aspects. *One recitation credit per week, first term. Elective.*

XVII. Textiles.—A study of fabrics; processes and appliances studied with reference to their historic development; primitive industries; modern processes of manufacture; dyeing, spinning, and weaving. *Two recitation credits per week, second term. Elective. Prerequisite: first term of History I, Home Economics I.*

XVIII. Dressmaking and Tailoring.—*Three laboratory credits per week, second term. Elective for students who have completed Home Economics I.*







HOSPITAL—DAVIS HALL.

## DOMESTIC SCIENCE.

A. Household Technique.—This course is planned to give a knowledge of the processes involved in household work. It deals with the handwork of cooking and cleaning; care of rooms, table setting and serving, etc. *Two recitation credits per week, first term, first year. Required of Short-Course students.*

B. Sewing.—Hand sewing; use of machine; drafting of patterns. *One laboratory credit, first term, first year. Required of Short-Course students.*

C. Foods.—Study of the five food principles and their nutritive and physiological functions; practice in the cookery of vegetables, cereals, fruits, milk, eggs, and meats. *Three recitation and one and one-half laboratory credits per week, second term, first year. Required of Short-Course students.*

D. Dietetics.—Provides instruction in advanced cooking; special cooking for sick and convalescent; planning of meals; discusses food for different ages and conditions. *Three recitation and one and one-half laboratory credits per week, first term, second year. Required of Short-Course students.*

E. Management of the House.—Considers the materials, qualities, amounts, and cost of house furnishing and supplies; lessons in marketing. *One recitation credit, second term, second year. Required of Short-Course students.*

F. Hygiene.—Study of the living machine, its mechanism and functions; the right use and proper care of the human mechanism; home nursing and emergencies. *One recitation credit per week, second term, second year. Required of Short-Course students.*

G. Textiles.—Study of the clothing fabrics; dressmaking. *One and one-half laboratory credits per week, second term, second year. Required of Short-Course students.*

## Education.

I. History of Education.—Study of the educational ideas and practices of the historical periods as a basis for the interpretation and appreciation of the essential features of modern education. *Three recitation credits per week, first term. Required of Seniors in Home Economics and Applied Science.*

II. Principles of Education.—The meaning and aim of education; modern educational theories; the biological, physiological, and psychological aspects of education. *Two recitation credits per week, second term. Required of Juniors in Home Economics, Option A; and of Seniors in Applied Science.*

III. Methods in Education.—Discussion of the organization and problems of the school; influence of personality of teachers; methods of teaching and study; consideration of subjects of study. *Two recitation credits per week, first term. Required of Seniors in Home Economics, Option A; and of Seniors in Applied Science.*

IV. Practicum.—Applied methods of teaching based on actual operations of class and observation work. Practice teaching in different classes. Hours arranged. *Four credits, second term. Required of Seniors in Home Economics, Option A.*

## Mechanical Engineering.

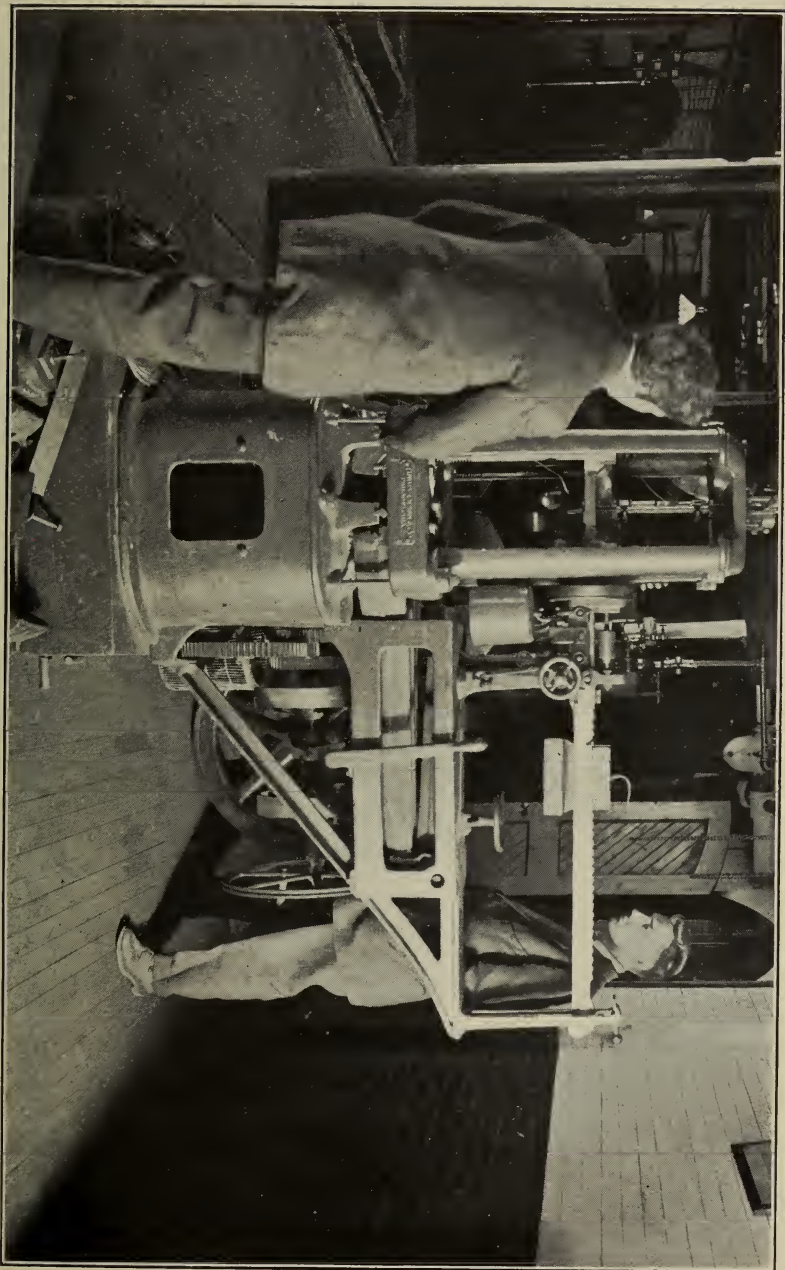
PROFESSOR WALES, MR. ELDRED, MR. EAMES.

It is the object of the work in the department of mechanical engineering to turn out broad-gauged, self-dependent men, well trained in engineering theory, familiar with the practical matters of construction and operation, and having some knowledge of the economic relations which the engineer and industrial development bear to modern society. In the endeavor to train men who will touch life, not at one point, but at many, the work of the department is supplemented and rounded out by extended and vigorous courses along the lines of electrical engineering, physics, mathematics, chemistry, English, history, modern language, and political economy. The special work of the department of mechanical engineering divides itself naturally into the following general groups: shop practice, design, steam engineering, and experimental engineering. Each of the above groups is amplified and briefly described below:

### SHOP PRACTICE.

The object of this work is to give familiarity with principles, operations, possibilities, and management, rather than to develop the greatest dexterity in manipulation. Shop practice extends over three years of the course, and comprises forging and foundry work, pattern making, and machine-tool operation. The shops are exceptionally well equipped with machines and tools of all kinds. In the machine shop are six metal lathes, speed lathes, planer, 16-in. shaper, two drills, two tool grinders, drill grinder, milling machine, punching-press, vertical boring and turning mill, together with the usual assortment of tools and auxiliaries. The pattern shop is provided with lathes, circular saw, band saw, jig saw, dowel machine, surface and buzz planers, etc. Fifteen work-benches fully provided with the small tools of the pattern maker complete the equipment. The forge shop is equipped with the usual anvils, forges, fullers, swages, hardies, etc., while a full stock of patterns, shovels, riddles, flasks, and trowels is provided for the work in foundry practice. Enthusiasm is given to the work by the construction of things of real value—a new machine for the shop, or a piece of apparatus for the laboratory—instead of spending the whole time on worthless “exercises.”





MECHANICAL LABORATORY—TESTING STEEL.









DRAFTING ROOM.

### DESIGN.

The work along the lines of design extends throughout the four years, beginning with freehand and mechanical drawing and ending with machine design and power-plant design in the Senior year. Leading up to this final work are the terms of mechanical drawing, descriptive geometry, mechanism, valve gears, dynamics of machines, mechanics, strength of materials, hydraulics, and thermodynamics. All the forces of correct theory and the practice of the most successful builders are brought to bear upon the solution of definite, practical problems.

### STEAM ENGINEERING.

Steam engineering begins in the Junior year and runs through the remainder of the course. A rigorous study of the mathematical theory of thermodynamics supplies the foundation for the study of boilers and engines, design and economy, and the various devices and auxiliaries of the power plant. In the Senior year is considered the particular branch of heating and ventilating. In this year, also, the subject of power plants is taken up, which applies all the previous training in steam engineering, and which brings together and unifies all allied subjects.

### EXPERIMENTAL ENGINEERING.

This subject, which extends throughout the Junior and Senior years, is intended to fix the theory developed in all the other lines of work. Instruction is given by means of lectures and laboratory tests. The student becomes familiar with the theory, construction, use, and calibration of the instruments and apparatus used by the engineer, and gains experience in making accurate standard and special tests. The work is divided into four groups: one dealing with the chemical problems of engineering—testing of gases, oils, fuels, feed water, etc.; a second, with general calibration and testing; a third, with the study and tests of structural materials; and the fourth, with general power-plant testing. In power-plant testing the students make the necessary plans and preparations, perform the experimental work, and prepare formal reports, with recommendations for improvement in economy, etc. These tests are made not only on the college power-plants, but on those of manufacturing

establishments of the state. The equipment for experimental work comprises several boilers and steam engines, large steam pump, hot-air engine, gas engine, feed-water heaters, several steam and gas engine indicators, steam calorimeters, tanks, scales, injectors, water turbine, hydraulic ram, meters, gauges, 50,000-lb. tension and compression machine, apparatus for oil and gas testing, fuel calorimeter, complete outfit for testing cements and concretes, etc. Throughout the work the greatest stress is laid upon the correct calculation and interpretation of results, and accuracy and self-dependence are developed to the fullest.

### Subjects.

I. Mechanical Drawing.—Lettering, freehand sketching, use of drafting tools, geometrical problems, projections, machine parts. *Three laboratory credits per week, first term; two laboratory credits per week, second term. Required of Freshmen in Engineering. One and one-half laboratory credits per week, first term. Required of Juniors in Home Economics. Three laboratory credits per week, throughout the year. Required of Short-Course students in Engineering, first year. Mr. Eames.*

II. Forge and Foundry.—Forging, drawing, bending, welding, etc. Principles of moulding, core making, and casting. *Three laboratory credits per week, first term. Required of Freshmen in Engineering and First-Year Short-Course students in Engineering. Mr. Eldred.*

III. Pattern Making.—Use of tools, bench and lathe work, pattern making. *Three laboratory credits per week, second term. Required of Freshmen in Engineering and First-Year Short-Course students in Engineering. Mr. Eldred.*

IV. Graphic Statics.—Force and funicula polygons with applications in the determination of stresses in framed structures. *Two recitation credits per week, second term. Required of all Sophomores in Engineering. Mr. Eames.*

V. Descriptive Geometry.—Elementary principles; problems relating to the point, line, plane, cylinder and double curved surfaces of revolution, intersections, and developments. *One recitation and two laboratory credits per week, first term. Required of all Sophomores in Engineering. Mr. Eames.*

VI. Mechanical Drawing.—Detail and assembly drawings, elementary machine design. *Three laboratory credits per week, second term. Required of Sophomores in Mechanical, Electrical and Civil Engineering. Three laboratory credits per week, throughout the year. Required of Short-Course students in Engineering, second year. Mr. Eames.*

VII. Machine Shop.—Hand work in chipping and filing, use of machine tools, construction of machines. *Three laboratory credits per week, second term. Required of Sophomores in Mechanical and Electrical Engineering. Three laboratory credits per week, throughout the year. Required of First-Year Short-Course students*



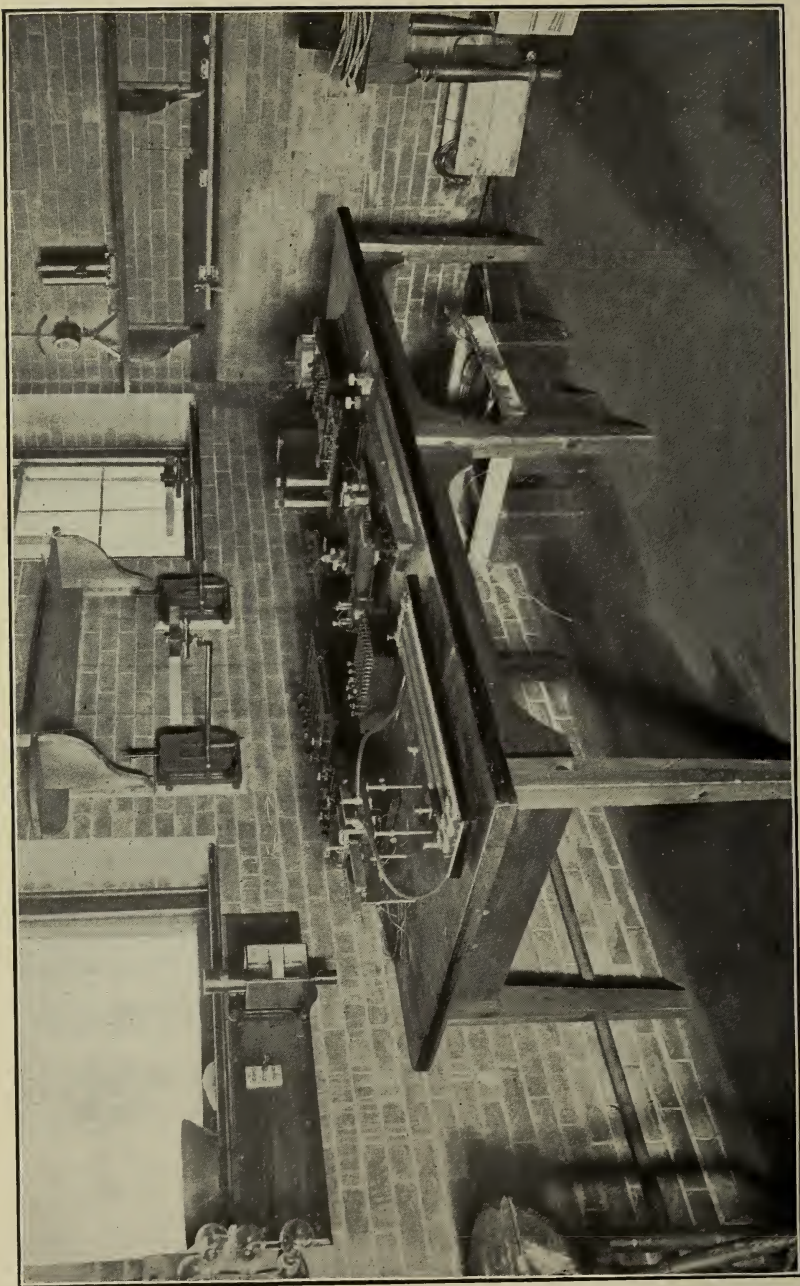


HEAT LABORATORY.









PRECISION LABORATORY.

*in Engineering. One and one-half laboratory credits per week, second term. Required of Sophomores in Civil Engineering. Mr. Eldred.*

IX. Steam Engineering.—Boilers and Thermodynamics.

Boilers.—Types, advantages and disadvantages, fuels, flue-gases, heat losses, corrosion and incrustation, strength, accessories, valves, piping, shop practice, design. Text, Peabody and Miller.

Thermodynamics.—Mathematical discussion of laws, application to perfect gases, saturated vapors, superheated vapors, flow of fluids, engine economy, effect of cylinder walls, compounding, superheating, use of jackets, effect of varying cut-off, speed, pressure, etc., friction, hot-air and gas engines, refrigerating machines, compressed-air transmission, injectors, thermodynamic principles applied to the steam turbine. Text, Peabody's Thermodynamics of the Steam Engine. *Three recitation credits per week, throughout the year. Required of Juniors in Mechanical, Electrical, and Civil Engineering, and for twenty-seven weeks of Juniors in Chemical Engineering. Professor Wales.*

X. Applied Mechanics.—Forces, composition and resolution, parallel forces, moments, couples, centres of gravity, velocity, acceleration, energy and momentum, falling bodies and projectiles, centrifugal force, moment of inertia, radius of gyration, angular momentum, energy of rotating bodies, impact, etc. Strength of materials, stresses in structures, riveted joints, beam theory, struts, columns, shafting, springs, etc. Solution of practical problems. Text, Lanza's Applied Mechanics. *Five recitation credits per week for twenty-four weeks. Required of Juniors in Mechanical, Electrical, and Civil Engineering, and of Juniors in Chemical Engineering for the first term. Professor Wales.*

XI. Hydraulics.—General principles, head and pressure, centre of pressure, velocity of discharge, flow through orifices and over weirs, Bernoulli's theorem, flow through pipes, flow through conduits and canals, energy of flow, horse powers, hydraulic machinery, rams, turbines, centrifugal pumps, and Pelton wheels. Merriman's Treatise on Hydraulics. *Five recitation credits per week, for last twelve weeks of second term. Required of Juniors in Mechanical, Electrical, and Civil Engineering. Professor Wales.*

XII. Mechanism.—Instantaneous centres, centroids, lobed wheels, belts, pulleys, four-bar linkages, graphical determination of velocity ratios, quick-return motions, straight-line motions, pantographs, trains of gears, epicyclic trains, tooth gearing, epicycloidal and involute teeth, bevel wheels, etc. Schwamb and Merrill's Mechanism. *Three recitation credits per week, first term. Required of Juniors in Mechanical and Seniors in Chemical Engineering. Mr. Eames.*

XIII. Valve Gears and Dynamics.—Plane slide valves, piston valves, riding cut-off valves; Joy and Marshall gears; Stephenson, Gooch and Walscheart link motions; drop cut-off valves; Corliss, Brown and Putnam valves; dynamics of high-speed engine; analysis of stresses; effects of inertia; balancing, etc. Peabody's Valve Gears. Lectures and references. *Three recitation credits, second term. Required of Juniors in Mechanical Engineering. Mr. Eames.*

XIV. Machine Shop (continuation of subject VII).—Advanced work in machine construction. *Three laboratory credits per week, throughout the year.*

*Required of Juniors in Mechanical Engineering, and Second-Year Short-Course students in Engineering. Mr. Eldred.*

XV. Experimental Engineering.—a.—Lectures and laboratory work in gases, oils, and fuels; flue gas analysis, calculation of air per pound of coal, loss due to excess air and to imperfect combustion; analysis of fuel gases and calculation of heating values; determination of heating values by the Junkers and Parr calorimeters; study of gases in producer and gas-engine work. *Two laboratory credits, first term. Required of Juniors in Mechanical, Electrical, and Civil Engineering, and Seniors in Chemical Engineering. Professor Wales.*

XVI. Experimental Engineering.—b.—General calibration and testing of engineering instruments and apparatus; gauges; planimeter; manometers; indicators; Prony brakes; scales; valve setting by measurement and by the indicator; Carpenter calorimeter; Peabody calorimeter; flow through orifices; weirs; nozzles; Pitot tube; meters; Venturi meters; hydraulic ram; turbine, etc. *Two laboratory credits per week, second term. Required of Juniors in Mechanical, Electrical, and Civil Engineering. Professor Wales and Assistant Professor Fottler.*

XVII. Experimental Engineering.—c.—Properties of materials. Lectures on the metallurgy of iron and steel; effects of impurities; coldworking; repeated stresses; tensile, compressive, and shearing strengths; ductility; resilience, etc.; copper, brass, bronze and other alloys; timber, stone, and brick. The manufacture of natural and Portland cements; effects of over and under burning, overliming,  $\text{SO}_3$ , etc.; discussion of tests and their interpretation. Laboratory work is parallel with lectures. Tensile strengths of cast-iron, wrought-iron, and steel; compressive strength of metals, timber, concrete, cement; shearing tests of metals; transverse tests of timber and iron; stress—strain diagram, elastic limit, yield point, modulus of rupture; tensile tests of cement; pat tests, boiling tests; specific gravity; fineness; time of set, etc. Determination of the best proportions of cement, sand, and rock of given characteristics. *Two lectures and two laboratory credits, first term. Required of Seniors in Mechanical, Electrical, and Civil Engineering. Professor Wales and Assistant Professor Fottler.*

XVIII. Experimental Engineering.—d.—Hot-air engine, gas engine, steam pump, injectors, transmission dynamometers; boiler tests; complete tests of power plants; outside work on the H. P. of a stream, with tests of hydraulic power plant; outside tests of manufacturing plants, with calculations, reports, and recommendations. *Two lecture and two laboratory credits, second term. Required of Seniors in Mechanical Engineering. The laboratory work will also be taken by Seniors in Civil Engineering. Professor Wales.*

XIX. Heating and Ventilation.—Discussion of the principles and practice of the various systems of heating and ventilating—direct and indirect, hot-air, hot-water, pressure steam, exhaust steam, vacuum systems, fans, blowers; calculation of ventilation and radiation; flues, pipes, and radiators; air troubles; central heating systems with central power plants; design of heating system for a given building. *Two recitation credits per week, second term. Required of Seniors in Mechanical Engineering. Professor Wales.*



XX. Machine Design.—Design of machine parts from considerations of the motions involved, strength, rigidity, and friction; design of a complete machine; calculations with design of some type of engine, starting with given requirements of H. P., speed, etc., and with an assumed theoretical indicator card. *Three laboratory credits, throughout the year. Required of Seniors in Mechanical Engineering.* Mr. Eames.

XXI. Power Plants and Power-Plant Design.—Study of the various types—as to choice, location, installation, and operation; prime movers, their accessories and auxiliaries.

Steam Plants.—Study of the effects on economy, range, and reliability of simple or compound, condensing or non-condensing engines with various valve gears, throttling and cut-off governors, different boiler installations, feed-water heaters, economizers, pressure regulators, pumps, injectors, mechanical stokers, forced and induced draft, chimneys, etc.; calculations of proper sizes, powers, and strengths of machines and apparatus of the power plant; methods of improving economy. The place of the steam turbine in power-plant work.

Hydro Plants.—Discussion of the types of hydraulic machinery, their efficiency and the particular conditions to which each is best adapted. This will be a development of the previous work in hydraulics to meet the need of the power engineer.

Gas-Producer Plants.—The different suction and pressure producers, theory, capacity, future, etc.; gas engines, from both the thermodynamic and the mechanical points of view. *Two lecture and one laboratory credits, first term. Required of Seniors in Mechanical and Electrical Engineering. Two lecture credits, second term. Required of Seniors in Mechanical Engineering.* Professor Wales.

XXII. Assigned Work.—This may be of the nature of research, or of specialized study along some particular line of engineering. Options are offered in theory of elasticity, advanced hydraulics, etc. *Three credits per week, throughout the year. Required of Seniors in Mechanical Engineering.*

D. Mechanical Movements.—Belts, pulleys, gearing, screw gearing, differential screws, tackles, hoists, hydraulic jacks, inclined planes, differential pulleys, pumps, crank and rocker, sliding and swinging block mechanisms, shafts, hangers, etc., cams and their design. *Three recitation credits, throughout the year. Required of First-Year Short-Course students in Engineering.*

E. Engineering Theory.—An elementary discussion of types of engines, valve gears, governors, etc., boilers, types, corrosion and incrustation, combustion, methods of firing, draft, safety valves, boiler H. P. testing; lubricants and lubrication; gas engines; elementary study of materials; practical electricity. *Five recitation credits, throughout the year. Required of Second-Year Short-Course students in Engineering.*

## Electrical Engineering.

PROFESSOR DICKINSON AND ASSISTANT PROFESSOR FOTTLER.

The aim of the course in electrical engineering is to give the student such training in the fundamental principles of the subject as will fit him to take up, in an intelligent and effective manner, any line of engineering work requiring special electrical knowledge. Instruction is given in both classroom and laboratory, the aim of each method of instruction being to supplement the other, and to develop resourcefulness and the habit of independent thought on the part of the student.

### Subjects.

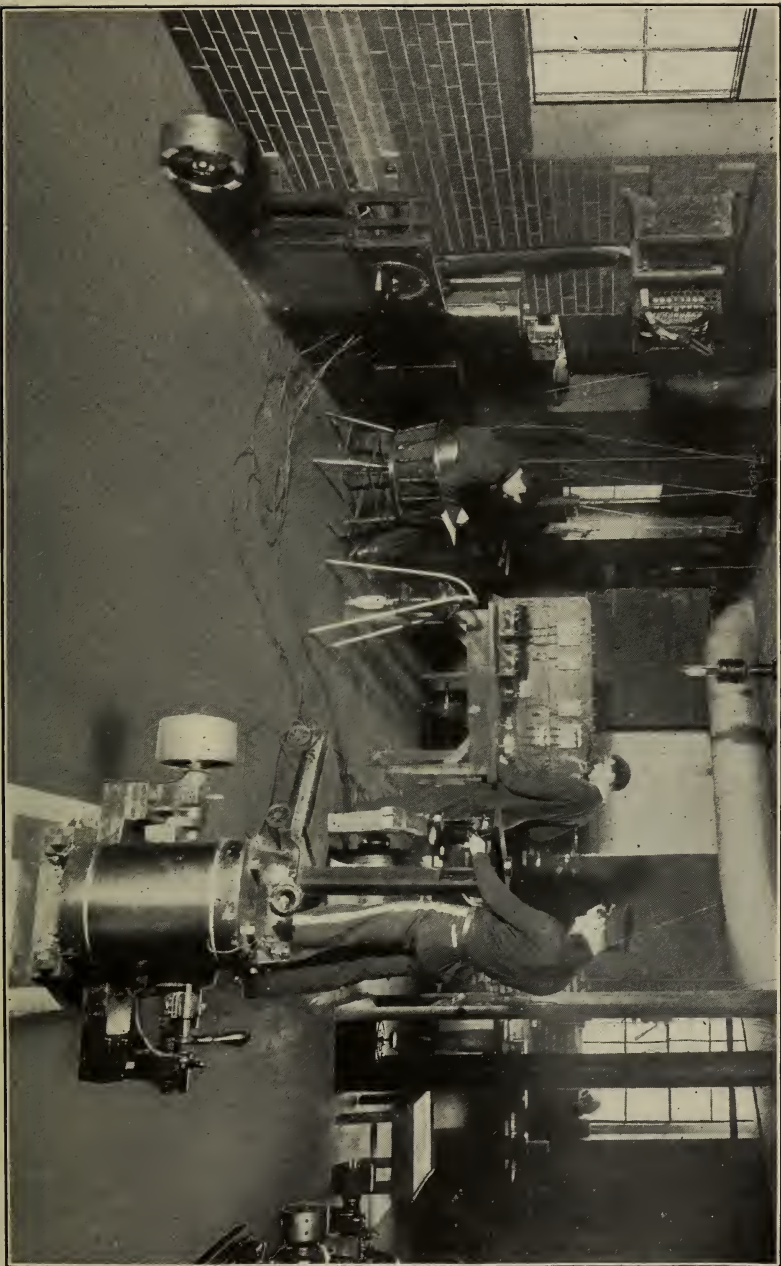
I. Theory of Direct Currents.—A detailed study of the theory of direct-current apparatus. The theory of dynamos, motors, and auxiliary apparatus. *Three recitation credits per week, first term. Required of Juniors in Electrical Engineering and of Seniors in Mechanical and Civil Engineering.* Assistant Professor Fottler.

II. Direct-Current Laboratory.—A course following Physics V, and consisting of tests of various types of direct-current apparatus. These include magnetization and characteristic curves of different types of machines, as well as tests for efficiency, regulation, temperature rise, and tests of a similar nature. *Three laboratory credits per week, second term. Required of Juniors in Electrical Engineering.* Assistant Professor Fottler.

IV. Theory of Alternating Currents.—Recitations and lectures. The elements of the theory of alternating currents, and of alternating-current machinery. This course includes the simpler theories regarding the action of A. C. dynamos, motors, converters, and transformers. *Two recitation credits per week, second term. Required of Juniors in Electrical Engineering and of Seniors in Mechanical Engineering.* Assistant Professor Fottler.

V. Theory of Alternating Currents.—Recitations and lectures, continuing subject IV. The more advanced theories regarding the effect of inductance and capacity in A. C. circuits, and of the action of A. C. machinery, are discussed. Assigned readings and reports are a feature of the subject. *Three recitation credits per week, throughout the year. Required of Seniors in Electrical Engineering.* Professor Dickinson.

VI. Alternating-Current Laboratory.—A course following Physics VII, consisting of tests of different types of alternating-current apparatus, such as single and polyphase generators and motors, induction motors, converters, and transformers. *Three laboratory credits per week, throughout the year. Required of Seniors in Electrical Engineering.* Assistant Professor Fottler.



ELECTRICAL LABORATORY—MOTOR TEST.



VII. Design of Electrical Machinery.—General principles of the design of electrical apparatus, including a direct and an alternating current generator. *One recitation credit per week, for nine weeks, first term; three laboratory credits per week, second term. Required of Seniors in Electrical Engineering.* Assistant Professor Fottler.

VIII. Telephone Engineering.—A consideration of the development of the modern telephone, with special reference to the common battery systems. *One recitation credit per week, first term. Required of Seniors in Electrical Engineering.* Professor Dickinson.

X. Transmission of Energy.—A study of systems of high-tension distribution, the effect of capacity and inductance, the construction of lines, their protection, and the troubles developing in high-tension work. *Two recitation credits per week, second term. Required of Seniors in Electrical Engineering.* Assistant Professor Fottler.

XI. Electric Railway Engineering.—A discussion of the economic considerations in the development of an electric railway, methods of construction, the location of the generating station, the design of the distributing system, types of motors, and systems of control. *Two recitation credits per week, second term. Required of Seniors in Electrical Engineering.* Assistant Professor Fottler.

XII. Assigned Work.—Thesis work is assigned to those Seniors possessing special aptitude for original research. Other students are assigned special work in the laboratories of the department. *Three laboratory credits per week throughout the year.* Professor Dickinson and Assistant Professor Fottler.

## Civil Engineering.

PROFESSOR WEBSTER.

It is the purpose of this course to give the student such training in the fundamental principles of engineering as to prepare him for the duties and opportunities that may be offered in the various fields of civil engineering. With this object in view, application of the theories and principles learned in the classroom is made in the field, laboratory, and drafting-room. An effort is also made to give the student as liberal a training in the sciences and arts as his limited time will permit, but the primary purpose is to prepare him for one definite line of work.

In order to widen the scope of the student's opportunities, the name of the department has been changed from Highway Engineering to Civil Engineering, and corresponding changes have been made in the course of study. However, owing to the growing importance of highway engineering in this state and throughout the country



in general, considerable emphasis is still placed on this phase of engineering work. The state appropriates annually a sum of money which is expended under the direction of the instructor and students of the department in the construction and maintenance of roads on the college property. In this way practical experience is obtained in highway engineering.

The equipment of the department consists of levels, transits; compasses, rods, tapes, chains, drafting instruments, etc., and testing machines, to which the student has access. He also has free use of the library, in which are found the leading engineering journals, and many of the principal works on various engineering subjects.

### Subjects.

I. Surveying.—Instruction is given by means of recitations, field and laboratory work, in the theory, use, and adjustments of the compass, level, and transit. The field work includes the prolongation of straight lines, determination of distances, angles, areas, boundaries, corners, and exercises in leveling, etc. Maps are made from the field notes. *One recitation and two field credits per week, first term. Required of Sophomores in Mechanical, Electrical, and Civil Engineering.*

II. Topographic Surveying.—A study is made of the theory and use of the plane table, and of the transit and stadia in making topographic surveys. A complete topographic survey based on a system of triangulation is made, including the completion of a map. *One recitation and two field credits per week, second term. Required of Sophomores in Civil Engineering.*

III. Railroad Engineering.—The work consists of a reconnoissance, a preliminary and a location survey of a short line of railroad, for the purpose of giving the student sufficient work to familiarize him with the methods in actual practice. A set of notes is kept by each student, from which a map, a profile, and estimates are made. A study is also made of the properties of curves, switches, frogs, turnouts, and the spiral, and the methods of locating these in the field. *Four credits per week, divided between field and recitation as seems advisable, first term. Required of Juniors in Civil Engineering.*

IV. Graphic Statics.—Instruction is given in graphic statics and its application in the design of simple framed structures. *Two recitation credits per week, first term. Required of Juniors in Civil Engineering.*

V. Roads and Pavements.—The theoretical work of this course consists of a discussion of the principles and details involved in the location, construction, and maintenance of earth, gravel, and macadam roads, together with a discussion of the methods of construction, durability, maintenance, and assessment of cost of the various kinds of pavements used on city streets. The field work consists in the construction of a gravel or macadam road on the college grounds. *Three*

*recitation and one field credits per week, second term. Required of Juniors in Civil Engineering.*

VI. Bridge Details.—The work in this course consists in making a tracing of a shop drawing, estimating the weight and determining the efficiency of the various members of a highway bridge. *Two laboratory credits per week, first term. Required of Seniors in Civil Engineering.*

VII. Bridge Analysis.—Instruction is given in the computation of stresses in the various types of bridges by graphical and algebraic methods under different conditions of loading. *Two recitation credits per week, first term. Required of Seniors in Civil Engineering.*

VIII. Bridge Design.—The student designs a plate girder and a bridge, makes the shop details, and a set of working drawings. *Three laboratory credits per week, second term. Required of Seniors in Civil Engineering.*

IX. Masonry Construction.—This course deals with the materials of masonry, including brick, stone, lime, and cement; the theory of masonry structures, including foundations for buildings, bridges, and piers; the construction of retaining walls, culverts, bridge abutments; masonry dams and arches. The student is directed to important articles in the current literature of the subject, and a systematic and thorough laboratory course on cement testing is given. *Two recitation and one laboratory credits per week, first term. Required of Seniors in Civil Engineering.*

X. Reinforced Concrete.—A study is made of the principles of mechanics underlying the design of reinforced concrete. Working stresses and economical proportions are considered, also the application of reinforced concrete construction to building construction, arches, retaining walls, dams, and miscellaneous structures. *Two recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XI. Sewerage.—A discussion of the separate and combined systems of sewers; relation of rainfall to storm-water flow; hydraulics of sewers; removal of house sewage; the design and construction of sewers and methods of sewage disposal. *Two recitation credits per week, first term. Required of Seniors in Civil Engineering.*

XII. Water Supply.—A discussion of the quantity of water required, sources of supply, flow of streams, and of ground water. Instruction is also given in the general arrangement of water works, loss of head in flow of water through pipes, stresses in dams and water towers. Works for the purification and distribution of water are discussed, including reservoirs, settling basins, pumping machinery, etc. *Three recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XIII. Tunneling.—A study of the methods of making tunnel surveys and of the modern methods employed in tunnel construction. *One recitation credit per week, second term. Required of Seniors in Civil Engineering.*

XIV. Contracts and Specifications.—A study of the fundamental principles of the law of contracts, and their application to engineering work. *Two recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XV. Assigned Work.—With the advice and consent of the head of the department, the student elects three hours' work in the Senior year. This may be research, thesis, or recitation and laboratory work, depending upon the qualifications of the student. *Three credits per week, throughout the year. Required of Seniors in Civil Engineering.*

XVI. Vacation Reading.—Systematic reading during vacations on some topic assigned by the head of this department.

XVII. Metal Structures.—The graphical determination of stresses in steel mill buildings. *One laboratory credit per week, second term. Elective for Seniors in Civil Engineering.*

XXIII. Irrigation Engineering.—This includes a study of the impounding, diverting, flow, and measurement of water, quantity acquired, canals, canal works, storage reservoirs, wasteways, etc. *Three recitation credits per week, first term. Elective for Seniors in Civil Engineering.*

## Geology and Mineralogy.

DR. WHEELER, DR. LEIGHTON, MR. SMITH.

GEOLOGY.—Under this subject historical geology is considered in outline, attention being given, also, to those phases of dynamical and structural geology which are particularly important. Special attention is given to rock weathering and soil formation, and to those characteristics of rocks which are of chief importance in connection with road construction.

DETERMINATIVE MINERALOGY.—A short course dealing with the elements of crystallography is given, together with the physical and chemical characteristics of minerals, especially of the rock-making minerals composing our soils. Laboratory work in blowpipe analysis and physical determination of minerals follows the crystallography.

### Subjects.

I. Geology.—*Two recitation credits per week, second term. Required of Juniors in Civil Engineering.*

II. Mineralogy.—See Chemistry XI.

## History.

PRESIDENT EDWARDS, ASSISTANT PROFESSOR SPENCER.

I. Social, Economic, and Industrial History of the United States.—*Two recitation credits per week, first term; and three recitation credits per week, second term. Required of Juniors in all courses.*



CIVIL ENGINEERING CLASSROOM.





II. Government and Politics in the United States.—*Five recitation credits per week, first term, last six weeks; and second term, first six weeks. Required of Seniors in all courses.*

## Languages.

PROFESSOR WATSON, ASSISTANT PROFESSOR SPENCER, MISS MYRICK.

The subjects grouped under this head are English, German, and French.

In all the college courses leading to a degree, English is required throughout the first three years and during twelve weeks of the Senior year. Much practice is given in written and oral expression, and literature is also studied in representative masterpieces. Two years of foreign language work are required in all college courses leading to a degree except mechanical, electrical, and civil engineering, where the requirement is one year. Preference is given to German, but French will be taught if there is sufficient demand for it.

The library is a most important factor in the work of the department, as the English language and literature are represented in it by some twelve hundred carefully selected volumes, and the French and German literatures by about six hundred.

### ENGLISH.

I. Rhetoric and Composition.—Text-book study. Use of standard and current literature for illustrative work. Weekly themes. *Two recitation credits per week, throughout the year. Required of all Freshmen.* Assistant Professor Spencer.

II. Newspaper Work.—*One recitation credit per week, first term. Required of Sophomores in all courses.* Assistant Professor Spencer.

III. Argumentation.—A study of fundamental principles. Practice in brief-making and essay writing. *One recitation credit per week, second term. Required of Sophomores in all courses.* Assistant Professor Spencer.

IV. Modern English Prose.—*Two recitation credits per week, first term; and one recitation credit per week, second term. Required of Juniors in all courses.* Professor Watson.

V. Modern English Poetry.—*Four recitation credits per week, second term, last twelve weeks. Required of Seniors in all courses.* Professor Watson.

VI. Individual Work in Composition.—*From three to five recitation credits per week, first term; Freshman year. Elective for Freshmen.* Professor Watson.

A. Elementary English.—Composition, oral expression, assigned reading. *Five recitation credits, throughout the year. Required of Short-Course students in Agriculture and Engineering, first year. Miss Myrick.*

B. Elementary English.—A continuation of A, including, also, some instruction in civics and economics. *Three recitation credits, throughout the year. Required of Short-Course students in Agriculture and Engineering, second year. Miss Myrick.*

## ORAL EXPRESSION.

ASSISTANT PROFESSOR SPENCER.

I. Interpretive Reading.—The fundamentals of expression, pronunciation, articulation, the training of the voice. The intellectual element in expression: emphasis, inflection, phrasing—the reading of prose. The emotional element in expression: quality, force, pitch, rhythm—the reading of poetry. The elements of dramatic expression. *One recitation credit per week, throughout the year. Required of all Sophomores.*

II. Debating.—Instruction and practice in the art of debate. Two public debates will be given by the students. *One recitation credit per week, throughout the year. Required of all Juniors.*

III. Oratory and Extempore Speaking.—Theory and practice. This work is given in connection with the subjects of Government, Political Economy, and English V. *One recitation credit per week, throughout the year. Required of all Seniors.*

## GERMAN.

PROFESSOR WATSON.

I. Elementary German.—Grammar, dictation, conversation, reading of easy prose and poetry. *Four recitation credits per week, throughout the year. Required of Freshmen who do not offer German for entrance.*

II. Reading of intermediate texts, composition, conversation, study of one of Schiller's masterpieces or similar work. *Three recitation credits per week, throughout the year. Required of Sophomores in Agriculture, Applied Science, Home Economics, and Chemical Engineering.*

III. Scientific and Classical German.—*Three recitation credits per week, throughout the year. Elective for students who have taken I and II or their equivalents.*

IV. Scientific German.—*From three to five recitation credits per week, first term; Freshman year. Elective for Freshmen.*

## FRENCH.

MISS MYRICK.

I. Elementary French.—Grammar, dictation, conversation, reading of easy prose and poetry. *Four recitation credits per week, throughout the year.*

II. Reading of intermediate texts, composition, conversation, selections from Hugo's *Les Misérables* or similar work. *Three recitation credits per week, throughout the year.*

III. Scientific and Classical French.—*Three recitation credits per week, throughout the year. Elective for students who have taken I and II or their equivalents.*

IV. Scientific French.—*From three to five recitation credits, first term; Freshman year. Elective for Freshmen.*

## Mathematics.

PROFESSOR TYLER, MR. HIGGINS.

The work in this department covers two distinct phases of mathematical training: the college and the short-course instruction. Throughout the regular college work, emphasis is laid both on the theory and direct application of the different subjects to the problems of engineering and agriculture. An attempt is made to present a working knowledge of arithmetic, algebra, and bookkeeping, and their practical use to Short-Course students.

### Subjects.

I. Higher Algebra.—*Five recitation credits per week, nine weeks, first term. Required of all Freshmen.* Professor Tyler, Mr. Higgins.

II. Trigonometry.—*Five recitation credits per week, nine weeks, first term. Required of all Freshmen.* Professor Tyler, Mr. Higgins.

VII. Trigonometry (completed).—*Five recitation credits per week, first four weeks, second term. Required of Freshmen in Engineering and Applied Science.* Professor Tyler, Mr. Higgins.

VIII. Analytics.—*Five recitation credits per week, last fourteen weeks, second term. Required of Freshmen in Engineering and Applied Science.* Professor Tyler, Mr. Higgins.

IX. Analytics (completed).—*Five recitation credits per week, first four weeks, first term. Required of Sophomores in Engineering.* Professor Tyler.

X. Calculus.—*Five recitation credits per week, last fourteen weeks, first term. Required of Sophomores in Engineering.* Professor Tyler.

XI. Calculus (completed).—*Five recitation credits per week, second term. Required of Sophomores in Engineering.* Professor Tyler.

XII. University Algebra.—*Three recitation credits per week, first term. Elective for Freshmen.*

XIII. Practical Computations.—*Three recitation credits per week, second term. Elective for Freshmen.*

F. Arithmetic.—*Five recitation credits per week, throughout the year. Required of students in the Short Courses, first year.* Mr. Higgins.

G. Bookkeeping.—*Four recitation credits per week, first term. Required of students in Short Courses, second year.* Professor Tyler.

H. Algebra.—*Five recitation credits per week, second term. Required of students in Short-Course Engineering, second year.* Professor Tyler.

## Military Science and Tactics.

LIEUTENANT STAHL.

All male students are required to attend exercises in military instruction during their attendance at the college, unless excused by reason of physical disability. Credit is given for this work on the same basis and under the same regulations as in other departments.

The war department furnishes for use in this instruction United States magazine rifles (Krag-Jorgensen pattern), swords, equipments, and ammunition for target practice. The cadets are organized this year into a battalion of two companies of infantry and band. Theoretical instruction is given by means of lectures and recitations, and practical instruction by means of infantry drills in the school of the squad, the company, and the battalion. The aim of these military exercises is to improve the physique, to inculcate the habit of prompt and cheerful obedience and courtesy to rightfully constituted authority, and to exercise an elevating influence on the conduct of the corps of cadets.

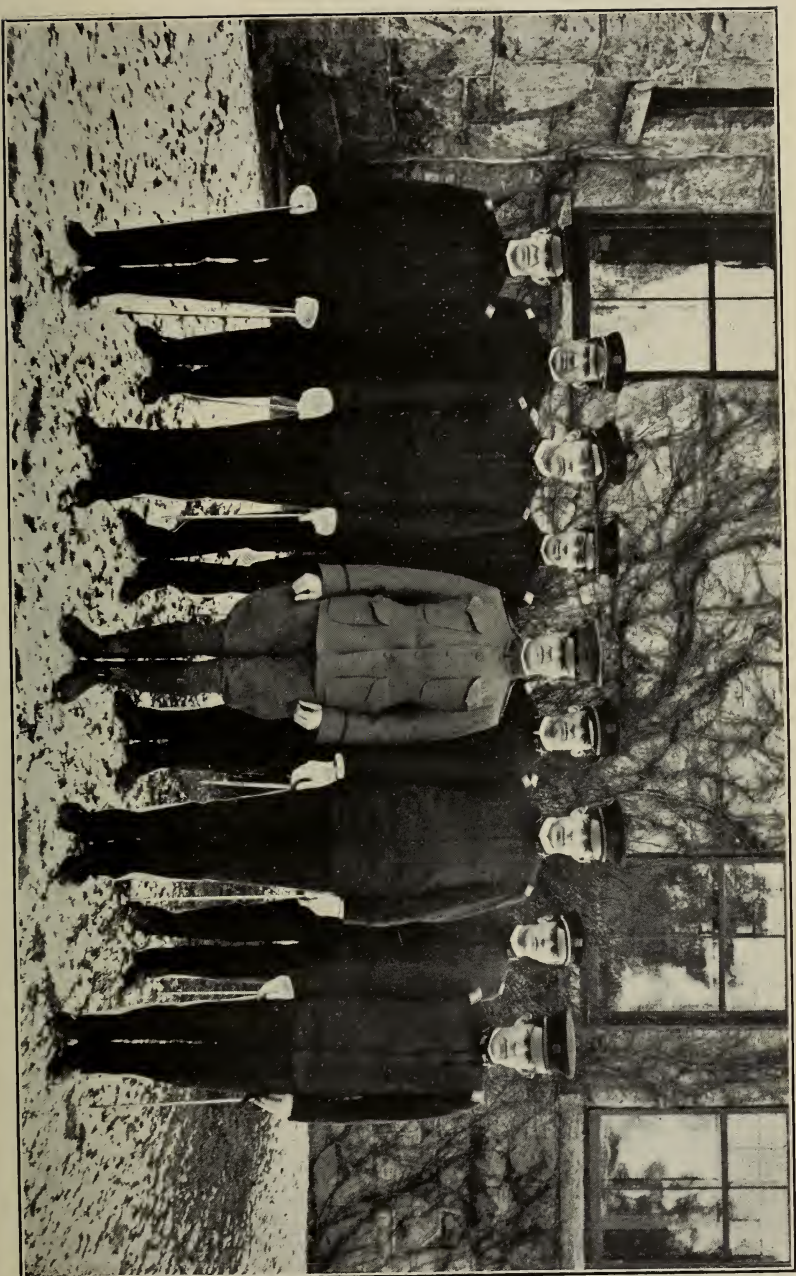
Competitive drills are held annually between the companies of the battalion. The name of the best drilled company and its commander is placed on the battalion colors. Company B, commanded by Cadet Captain P. S. Burgess, was the winner in the annual color contest held June 16, 1909.

The names of such students of the graduating class each year as have shown special aptitude for military service will be reported to the adjutant-general of the army and also to the adjutant-general of the state.

### Subjects.

I. Practical Instruction.—Drills in the school of the squad, of the company, and of the battalion; target practice. *Two exercises of one hour each per week, counting as one credit, throughout the year. Required of all the command.*





OFFICERS OF BATTALION.





II. Theoretical Instruction.—United States Infantry Drill Regulations. Small Arms Firing Regulations. Manual of Guard Duty. Field Service Regulations of United States Army. *One recitation credit per week, throughout the year. Required of all Freshmen.*

## BATTALION ORGANIZATION, JANUARY 11, 1910.

COMMANDANT,

HENRY G. STAHL, First Lieutenant, 6th U. S. Infantry.

CADET OFFICERS AND NON-COMMISSIONED OFFICERS.

### *Battalion.*

Major.....	P. S. BURGESS..
Adjutant.....	L. SLACK..
Quartermaster.....	D. E. WARNER..
Sergeant-Major.....	H. N. BARLOW..
Color Sergeant.....	C. B. EDWARDS..
Quartermaster Sergeant.....	C. R. WADE..

### *Company A.*

Captain.....	R. W. GOODALE..
First Lieutenant.....	R. H. CARPENTER..
Second Lieutenant.....	A. J. MINOR..
First Sergeant.....	D. E. WORRALL..
Sergeant.....	W. HENRY..
Sergeant.....	J. I. HARDY..
Sergeant.....	I. C. MITCHELL..
Sergeant.....	B. R. ROBINSON..
Corporal.....	W. J. WHALEN..
Corporal.....	C. E. ANGILLY..
Corporal.....	H. A. SAFFORD..
Corporal.....	R. W. RUPRECHT..

### *Company B.*

Captain.....	A. F. WAGNER..
First Lieutenant.....	H. J. SMITH..
Second Lieutenant.....	R. W. CUMMINGS..
First Sergeant.....	B. K. HARRIS..
Sergeant.....	L. C. EASTERBROOKS..
Sergeant.....	E. A. COMBER..
Sergeant.....	R. H. WHEELER..
Sergeant.....	W. H. TULLY..
Corporal.....	H. A. EASTERBROOKS..
Corporal.....	P. J. HEALY..
Corporal.....	C. R. GILCREST..
Corporal.....	W. DOLL..

*Band.*

Chief Musician.....	W. C. RIETZEL.
Principal Musician.....	H. B. ALBRO.
Drum Major.....	W. T. NEAL.
Sergeant.....	C. W. RIETZEL.
Corporal.....	B. A. AHRENS.

**Physics.**

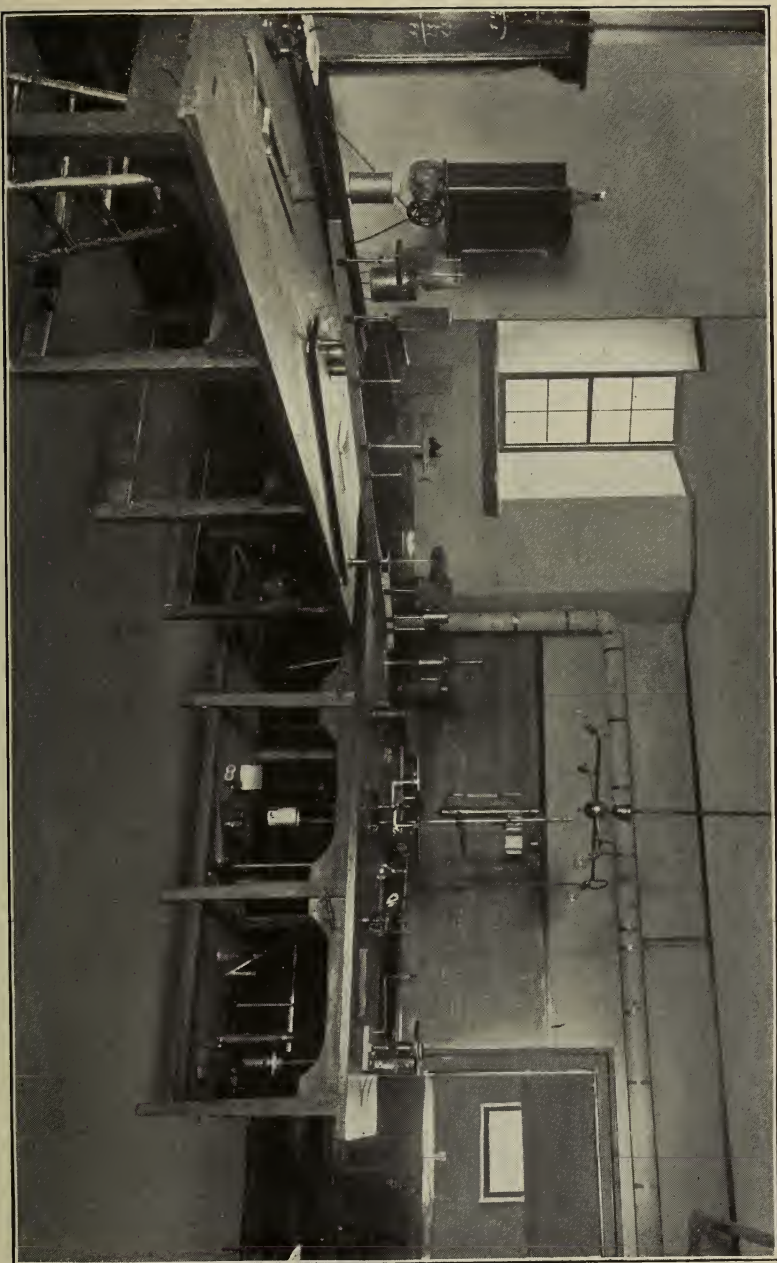
PROFESSOR DICKINSON AND ASSISTANT PROFESSOR FOTTLER.

The instruction given in this department is intended to acquaint the students with the fundamental concepts of physical science. The work will be as broad as is consistent with the time and needs of the students.

This department is equipped with vernier and micrometer calipers, micrometer microscopes, comparator, dividing engine, cathetometer, simple and compound pendulums and balances for exact measurements in mechanics. It has also apparatus for determining the coefficient of linear expansion, and for the determination of specific and latent heats, a weight thermometer apparatus for determining the density of liquids and solids, a thermo-couple for direct determination of temperatures up to  $1650^{\circ}$  C., Melloni's apparatus for investigation in radiant heat, and apparatus for determining the mechanical equivalent of heat.

In light, the laboratory is equipped to carry on the usual college work, and so has apparatus for finding the focal length of lenses and mirrors: a Pulfrich refractometer; spectrometers; an interferometer (Institute of Technology patterns); photometer; total reflectometer; and many smaller instruments, including simple and compound microscopes. The greater part of the above listed apparatus is new, having been recently purchased of foreign makers.

The laboratory for exact measurements in electricity and magnetism is also fitted up with new apparatus recently purchased of the Leeds and Northrup Company of Philadelphia, and among other instruments are several types of D'Arsonval galvanometers; Wheatstone bridges, slide wire and post-office patterns; standard cells (Clark and Weston types); standards of resistance, capacity and self-induction; magnetometers; voltmeters; and many smaller instruments sufficient to carry out the usual college work in electrical



CORNER OF PHYSICS LABORATORY.





measurements. For advanced electrical measurements the department is provided with Weston and Thompson ammeters, and voltmeters with both low and high ranges, wattmeters, a Leeds and Northrup alternating and direct current comparator.

In the subject of sound the department is provided with apparatus for the determination of wave-length, pitch, frequency, etc.

### Subjects.

I. Descriptive Physics.—A course designed for students in Agriculture. Considerable time is given to the discussion of the principles of mechanics as applied to farm machinery. The course furnishes an excellent foundation for further work in agricultural physics. *Five recitation credits per week, second term. Required of Sophomores in Agriculture and Home Economics.* Assistant Professor Fottler.

II. General Physics.—A mathematical treatment of the subject. *Four recitation credits per week, throughout the year. Required of all Sophomores in Engineering and Teachers' Course in Applied Science.* Professor Dickinson.

III. Laboratory Physics.—A course in physical measurements intended to teach students methods and to form a basis for future engineering work. The calculation of results will be given special attention. *One and one-half laboratory credits per week, throughout the year. Required of Sophomores in Engineering and Teachers' Course in Applied Science.* Professor Dickinson.

IV. Electrical Measurements.—A course of lectures treating of the theory and manipulation of electrical measuring instruments. *Three recitation credits per week for nine weeks, first term. Required of Juniors in Electrical Engineering.* Assistant Professor Fottler.

V. Electrical Measurements Laboratory.—Direct-currents measurements, resistance, potential current, magnetic properties of iron and steel, calibration of direct-current instruments. *One and one-half laboratory credits per week, first term. Required of Juniors in Electrical Engineering.* Assistant Professor Fottler.

VI. Principles of Illumination.—A study of different sources of light, the measurement of candle power, and the principles of illuminating engineering. *One recitation credit per week, second term. Required of Juniors in Electrical Engineering.* Professor Dickinson.

VII. Electrical Measurements Laboratory.—Alternating-currents measurements, self-induction, mutual-induction, capacity. Calibration of alternating-current instruments. *Three laboratory credits for six weeks, first term. Required of Seniors in Electrical Engineering.* Assistant Professor Fottler.

A. Elementary Physics.—A course designed to give the student a grasp of the more important physical principles underlying Engineering work. *Three recitation and one laboratory credits per week, throughout the year. Required of Short-Course students in Engineering, second year.* Professor Dickinson.

## Psychology.

PRESIDENT EDWARDS.

I. Lectures, recitations, simple experiments.—*Three recitation credits per week, first term. Required of Juniors in Applied Science and Home Economics.*

## Woodwork.

MR. T. C. RODMAN.

H. Farm Buildings.—A practical course in the planning of farm structures, estimating quantities of material required, and costs. *One shop credit per week, second term. Required of Short-Course students in Agriculture, second year.*

I. Shopwork.—Woodworking at the bench and lathe. *One and one-half shop credits per week, first term. Required of Short-Course students in Agriculture, second year.*

## Zoölogy.

PROFESSOR BARLOW.

The work in this department is designed to meet the needs of two classes of students, those who are interested in the economic aspect of animal life and those who purpose to become teachers. To meet the needs of the first class, subjects are given which are planned to call attention to the economic importance of the different orders. Much time is allotted to entomology, and in this subject special attention is given to injurious species. For those who are to be teachers, a thorough training is given in the morphology and classification of animals as a preparation for the more special subjects that follow. In these attention is directed to the habits and relations of animals, which are studied both in the field and laboratory.

The laboratory is equipped with a series of charts, valuable models, and many mounted skeletons. The Rhode Island birds are represented by mounted specimens of practically every species; fishes, reptiles, and batrachians, by alcoholic preparations. The collection of insects, begun recently, now fills about one hundred cases, and is being steadily increased. Each student is given the use of compound and dissecting microscopes. The necessary instruments for laboratory work can be procured at small cost at the college store.



BIOLOGICAL LABORATORY.



## Subjects.

I. General Zoölogy.—Discussion of the more important laws of biology and the dissection of representatives of the more important Phyla. *Two laboratory and two recitation credits, first term. Required of Sophomores in Agriculture, Home Economics, and Applied Science.*

II. General Zoölogy (continued).—Special attention is given to the relation of animals to their surroundings. *Two laboratory and one recitation credits, second term. Option for Seniors in Applied Science.*

III. Physiology.—The physiology of the higher mammals. *One laboratory and three recitation credits per week, second term. Required of Sophomores in Agriculture, Home Economics, and Applied Science.*

IV. Economic Entomology.—*One laboratory and three recitation credits per week, second term. Required of Juniors in Agriculture. Option in Applied Science.*

V. General Entomology.—*Two laboratory and one recitation credits per week, first term; two recitation and three laboratory credits per week, second term. Option for Seniors in Applied Science.*

VI. Systematic Entomology.—*Three or five laboratory credits per week, throughout the year. Elective for those who are taking or have taken Zoölogy V.*

VII. Vertebrate Anatomy.—*Two laboratory and one recitation credits per week, first term. Required of Juniors in Home Economics. Option for Juniors in Applied Science.*

VIII. Histology and Embryology.—*Three laboratory and two recitation credits per week, second term. Required of Juniors in Home Economics. Option for Juniors in Applied Science.*

IX. Methods in Nature Study.—Bird life, habits of insects, aquaria. *One and one-half laboratory or field credits per week, second term. Required of Sophomores in Applied Science.*

A. Elementary Zoölogy.—Deals with forms of economic importance. *Three recitation and one and one-half laboratory credits per week, first term. Required of Short-Course students in Agriculture and Domestic Science, first year.*



## Organizations.

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### Athletic Board.

HOWARD ALBERT SAFFORD.....	President.
JAMES FRANCIS NUGENT.....	Vice-President.
JOHN BARLOW.....	Secretary-Treasurer.

### Agricultural Club.\*

HOWARD ALBERT SAFFORD.....	President.
PATRICK JOSEPH HEALY.....	Vice-President.
JONATHAN FARNUM COMSTOCK.....	Treasurer.
WALTER COLWELL IRONS.....	Secretary.

### Engineering Society.

WARREN HENRY.....	President.
GEORGE ABBOTT PEABODY.....	Vice-President.
HARRY BENJAMIN ALBRO.....	Secretary-Treasurer.

### Science Club.

PHILIP BARDWELL HADLEY, Ph. D.....	President.
FREDERICK RUSSELL PEMBER, M. S.....	Vice-President.
ELIZABETH ELLEN AMISON, B. S.....	Secretary.

### Student Council.

JOHN LELAND SHERMAN.....	President.
WILLIAM THOMAS NEAL.....	Vice-President.
PHILIP HARRISON CLARK.....	Secretary.

### Young Men's Christian Association.

JOHN IRA HARDY.....	President.
CARLE MUZZY BIGELOW.....	Vice-President.
WARREN HENRY.....	Secretary-Treasurer.

### Young Women's Christian Union.

BERTHA MAY HEATH.....	President.
ANNIE ELIZA KENYON.....	Vice-President.
ELECTRA HENRIETTA COBB.....	Secretary.
HARRIET TABER TUCKER.....	Treasurer.

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\*Affiliated with the New-England Federation of Agriculturists.



GLEE CLUB.



## Alumni Association.

ARTHUR EARLE MUNRO, 1900.....President.

Providence, R. I.

CLOVIS WILLIAM MITCHELL, 1908.....Vice-President.

New London, Conn.

BLYDON ELLERY KENYON, 1899.....Secretary-Treasurer.

Austin, Texas.

### *Executive Committee.*

A. E. MUNRO, 1900,

B. E. KENYON, 1899.

C. W. MITCHELL, 1908,

L. L. HARDING, 1906.

H. R. TISDALE, 1909.

## Students.

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### Graduates.

Amison, Elizabeth Ellen (B. S., Simmons College, '09), Bacteriology and Botany.....	Kingston.
Cobb, George Robert (B. S., Mass. Agricultural College, '08), Horticulture and Zoölogy.....	Kingston.
Hammett, Frederick Simons (B. S., Tufts College, '08), Chemistry and Botany.....	Kingston.
Jones, Frederick W. (Brown University), Selected Subjects.....	Providence.
Kirkpatrick, William Franklin (B. Agr., North Carolina College of Agriculture and Mechanic Arts, '05), Animal Husbandry and Zoölogy..	Kingston.
Whiting, Albert Lemuel (B. S., Mass. Agricultural College, '08), Agronomy and Botany.....	Kingston.

### Seniors.

Burgess, Paul Steere, Chem. Eng.....	Pawtucket.
Carpenter, Randolph Haywood, El. Eng.....	East Providence.
Cummings, Robert Winthrop, Mech. Eng.....	Orange, Mass.
Easterbrooks, Harold Arnold, Biol.....	Providence.
Goodale, Ralph Waldo, Civ. Eng.....	Leominster, Mass.
Hardy, John Ira, Gen. Sci.....	Groveland, Mass.
Heath, Bertha May, Agr.....	Lunenburg, Mass.
Henry, Warren, Highway Eng.....	Hopedale, Mass.
Kenyon, Amos Harris, El. Eng.....	Usquepaugh.
Lamond, Helen Scott, Gen. Sci.....	Usquepaugh.
Mounce, Leroy Leidman, Agr.....	North Marshfield, Mass.
Peabody, George Abbott, El. Eng.....	Middleton, Mass.
Sherman, John Leland, Agr.....	Providence.
Smith, Hiram Jameson, Civ. Eng.....	Woonsocket.
Wagner, Albert Frederic, El. Eng.....	Berkeley.
Wheeler, Richard Howes, El. Eng.....	Campello, Mass.
Worrall, David Elbridge, Chem.....	Woonsocket.

### Juniors.

Andrews, Carmen Nichols, Appl. Sci.....	Slocums.
Angilly, Charles Enoch, Jr., Civ. Eng.....	Providence.
Caldwell, Dorothy Walcott, Civ. Eng.....	Woonsocket.
Comber, Edward Anthony, El. Eng.....	Narragansett Pier.



Gilchrest, Clyde Ronald, El. Eng.....	Leominster, Mass.
Harris, Burton Kenneth, Chem. Eng.....	Lime Rock.
Hazard, Ralph Marshall, Civ. Eng.....	Newport.
Healy, Patrick Joseph, Agr.....	Newport.
Kent, Robert Willard, Mech. Eng.....	Woonsocket.
Kenyon, Annie Eliza, Appl. Sci.....	Usquepaugh.
Minor, Arthur Jacob, Civ. Eng.....	Kingston.
Mitchell, Irving Calvary, Appl. Sci.....	Harrisville.
Neal, William Thomas, Agr.....	Pittsfield, Mass.
Robinson, Benjamin Rowland, Mech. Eng.....	Bedford Station, N. Y.
Ruprecht, Rudolph William, Appl. Sci.....	New York, N. Y.
Safford, Howard Albert, Agr.....	Providence.
Wade, Ceylon Raymond, Civ. Eng.....	Bridgeton.
Warner, David Edmond, Jr., Agr.....	Bridgeton.
Whalen, William Joseph, Civ. Eng.....	Providence.
Wheeler, Ellery Harrison, El. Eng.....	Valley Falls.

### Sophomores.

Barlow, Henry Newell, Mech. Eng.....	Wassaic, N. Y.
Bigelow, Carle Muzzy, Appl. Sci.....	Woonsocket.
Briden, Frank Harold, Mech. Eng.....	Central Falls.
Caldwell, Seth Atherton, Mech. Eng.....	Woonsocket.
Clark, Philip Harrison, El. Eng.....	Centreville.
Cobb, Electra Henrietta, Home Econ.....	Howardville, Va.
Doll, Walter, Mech. Eng.....	Pawtucket.
Gould, Alice Varney, Home Econ.....	Milo, Me.
Hadley, Chester Brown, El. Eng.....	Woonsocket.
Johnson, Charles Varnum, Civ. Eng.....	Allenton.
Larkin, Charles Herbert, Civ. Eng.....	Ashaway.
Nugent, James Francis, Civ. Eng.....	Providence.
Nutting, Bertha May, Home Econ.....	Brickerville, Pa.
Patterson, Arthur John, El. Eng.....	Buffalo, N. Y.
Randall, William Olney, El. Eng.....	Providence.
Richmond, Fred Allen, El. Eng.....	Hope Valley.
Sherman, George William, Jr., El. Eng.....	Lafayette.
Slater, Allae Cordelia, Home Econ.....	Providence.
Steere, Charles Arnold, Agr.....	Greenville.
Stetson, Clifton Orrison, El. Eng.....	Randolph, Mass.
Sullivan, John Leo, El. Eng.....	Lonsdale.
Tyler, Earl Albert, Appl. Sci.....	Centreville.
Webster, Samuel C., Jr., Agr.....	Westerly.
White, Thomas Bush, Mech. Eng.....	Amesbury, Mass.

### Freshmen.

Ahrens, Bernard Alexander, Agr.....	Elmhurst, Long Island, N. Y.
Alexander, Ralph Irwin, Eng.....	Baldwinville, Mass.

Babcock, Edwin States, El. Eng.....	East Greenwich.
Baldwin, George Holland, Eng.....	Valley Falls.
Bates, Reuben Charles, Eng.....	Providence.
Berry, Carl, Civ. Eng.....	Cambridge, Mass.
Beuzard, Blanche Ruth Ella Dodge, Home Econ.....	Providence.
Borden, Marion Wilhelmina, Home Econ.....	Providence.
Brooks, John Charles, El. Eng.....	Ashton.
*Brown, Herman Byron, Appl. Sci.....	Hope Valley.
Bullock, Dorothy Jennette, Home Econ.....	Pawtucket.
Champlin, Charles Edwin, El. Eng.....	Westerly.
Cohen, Benjamin, El. Eng.....	New Bedford, Mass.
Comstock, Jonathan Farnum, Agr.....	Cranston.
Coop, William Lewis, Jr., Eng.....	Providence.
Corr, William John, Chem. Eng.....	East Greenwich.
Cottrell, George Edwin, Agr.....	Westerly.
Cripps, Everett Thomas, Civ. Eng.....	Providence.
Diaz, George Soler, El. Eng.....	Havana, Cuba.
Elkins, Dorothy Dearborn, Home Econ.....	Amesbury, Mass.
Elkins, Marguerite White, Home Econ.....	Amesbury, Mass.
Ford, Alice Edith, Agr.....	North Easton, Mass.
Freeman, Philip Edwards, Eng.....	Stony Creek, Va.
Goodchild, Charles Isaac, Civ. Eng.....	Providence.
Hart, Crawford Peckham, Agr.....	Melville Station, Newport.
Hauxhurst, Harold Williams, Eng.....	Providence.
Henderson, Samuel James, Eng.....	Hingham Centre, Mass.
*Hodge, Emory Shailer, Jr., Mech. Eng.....	Peace Dale.
Hopkins, Raymond Canfield, Eng.....	Shannock.
*Howes, James Ellis, Agr.....	Dennis, Mass.
Irons, Walter Colwell, Agr.....	North Scituate.
Kelley, Levi Martin, Jr., Eng.....	Cranston.
*Levin, Julius, Agr.....	Providence.
Magoon, Nelson Briggs, El. Eng.....	East Greenwich.
Matteson, Wayne Thurman, Eng.....	Block Island.
Miller, Joseph, Eng.....	Narragansett Pier.
Noyes, Edwin Roy, Eng.....	East Greenwich.
Perry, Edward Tempest, Eng.....	Providence.
Phillips, Fred Sheldon, Eng.....	Lafayette.
Porter, William James, Eng.....	Valley Falls.
Potter, Charles Thornton, Agr.....	Natick.
Redding, William Francis, Civ. Eng.....	Meshanticut.
Reynolds, Arthur Leslie, El. Eng.....	Providence.
*Riback, Philip, Eng.....	Providence.
Rollins, John Frank, Civ. Eng.....	New London, Conn.
*Rossi, Louis, Eng.....	Westerly.
Siegel, Samuel, Civ. Eng.....	Newark, N. J.
Slavin, Matthias, Agr.....	Chatham, Mass.

Slocum, George Edwin, Eng.....	Providence.
Smith, Elmer Carleton, Agr.....	Wyoming.
Spicer, Lucius Baldwin, Eng.....	Groton, Conn.
Stedman, Oliver Hazard, Eng.....	Peace Dale.
Swift, Paul Gammons, El. Eng.....	West Falmouth, Mass.
Tucker, Payson Waite, Appl. Sci.....	Narragansett Pier.
*Tully, William Henry, El. Eng.....	Peace Dale.
Turner, Walter Raymond, Eng.....	Johnston.
Webb, Harry, El. Eng.....	Cranston.
Wood, Susie Stanton, Home Econ.....	Slocums.
Young, James Hannibal, Appl. Sci.....	Brooklyn, N. Y

### Irregular in Classification.

Albro, Harry Benjamin, El. Eng.....	Pontiac.
Berry, John G., Agr.....	Cambridge, Mass.
Berry, Elsbeth Katrina.....	Cambridge, Mass.
Butterworth, Frank Bullock, Agr.....	Somerset, Mass.
Daniels, Willis Washington, Civ. Eng.....	Pawtucket.
Davis, Edgar George, Civ. Eng.....	Providence.
Easterbrooks, Louis Church, Agr.....	Providence.
Edwards, Clarence Bland, Agr.....	Kingston.
Fagan, Hugh Jean, Civ. Eng.....	Peace Dale.
Falk, Gustav Adolf, El. Eng.....	East Greenwich.
Goddard, Archie Coggeshall, Agr.....	Newport.
Hammett, Lena Starr.....	Kingston.
Kimball, Rhoda Evelyn, Agr.....	South Dartmouth, Mass.
Leonard, Charles Augustus, El. Eng.....	Hingham, Mass.
Leonard, James Basil, Agr.....	Hingham, Mass.
Madison, Thomas Edwin, El. Eng.....	East Greenwich.
Meears, Etta Elizabeth.....	Kingston
Mounce, Harry Lyden, El. Eng.....	North Marshfield, Mass.
Pickering, Earl Vivian, Civ. Eng.....	Blackstone, Mass.
Quinn, Stephen.....	Wakefield.
Robinson, Eben George, Agr.....	Edgewood.
Slack, Lewis, Civ. Eng.....	Kingston.
Steck, Frank, Civ. Eng.....	Newark, N. J.
Taylor, Walter Gray, El. Eng.....	Middletown.
Tucker, Harriet Taber, Gen. Sci.....	West Kingston.

### Two-Year Courses.

Aizpuru, Frank, Agr.....	Panama, Panama.
Aldred, James Hilton, Mech. Arts.....	Ashton.
Anderson, William Edward, Agr.....	Westerly.
Black, Theodore Edgar, Agr.....	Westerly.

\*Special Freshman—see page 25 of 1909 catalogue.

Caldwell, Frederic Wyllys, Agr.....	Woonsocket
Caspersen, Bjarne, Agr.....	Dorchester, Mass
Chapin, Albert Marcellus, Agr.....	Lee, Mass.
Croft, Frank Emerson.....	Plymouth, Mass.
Duggan, John Vincent, Mech. Arts.....	Portsmouth.
Dyer, Lola Segar, Domestic Sci.....	Slocums.
Gray, Albert Franklin, Mech. Arts.....	Narragansett Pier.
Harris, Bertha, Domestic Sci.....	West Kingston.
Herreshoff, Lewis Francis, Agr.....	Bristol.
Hoxsie, David Kenyon, Agr.....	Canochet.
Hoxsie, Harry Bailey, Agr.....	Quonochontaug.
Kyle, Thomas, Agr.....	Central Falls.
Lambert, Leroy Leigh.....	Apponaug.
MacKenzie, William.....	Westerly.
Matthews, Wilfred Chipman, Eng.....	Providence.
Pollard, Raymond George, Mech. Arts.....	Valley Falls.
Purinton, Elbert Thomas, Agr.....	Providence.
Rietzel, Charles Wheelock.....	Charlestown.
Rietzel, William Charles.....	Charlestown.
Rouse, Clifford Augustus.....	Shannock.
Schryver, Albert Robins, Agr.....	Jericho, Long Island, N. Y.
Shaylor, Fred Wright, Agr.....	Lee, Mass.
Tefft, Lucy Catherine, Agr.....	Jamestown.
Thornley, Albert Lewis, Agr.....	Pawtucket.
Wilson, Sara Iola, Home Econ.....	Westerly.

### Poultry-Keeping.

Aldrich, Daniel Gaskill.....	Georgiaville.
Bridge, Horace.....	Augusta, Me.
Brown, Crawford Allen.....	Waverly, Mass.
Connery, William Henry.....	Bristol.
Dibblee, James Edmund.....	Madison, N. H.
Hansen, Charles William.....	New York, N. Y.
Jones, Edward Edgar.....	New York, N. Y.
Lewis, Richard J.....	Melville Station, Newport.
Lynde, Charles Rollin.....	New York, N. Y.
Merrill, Charles Edward.....	Somerville, Mass.
Moore, Rufus Reid.....	Roxbury, Mass.
Nash, Grace Pearson.....	Harrington, Me.
Nash, Melissa Winifred.....	Harrington, Me.
Osgood, Kingsley.....	Rutland, Vt.
Palamiotes, George A.....	Salem, Mass.
Richardson, George S.....	West Kingston.
Rickey, Harry W.....	Red Bank, N. J.
Sayer, John William.....	Concord, Mass.
Slater, Duane Smith.....	Tyringham, Mass.
Thebaud, Jule S.....	St. Andrews, New Brunswick, Canada.

Graduates.....	6
Seniors.....	17
Juniors.....	20
Sophomores.....	24
Freshmen.....	59
Irregulars.....	25
Two-Year Courses.....	29
Poultry Students.....	20
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Total number of students (none counted twice) .....	200



## Graduates.\*

1894.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ADAMS, GEORGE EDWARD . . . Kingston.	Agr.	Chief of Dept. of Agriculture and Professor of Agronomy, R.I.S.C.
AMMONDS, GEORGE CLARENCE . . . 5 Boylston Place, Boston, Mass.	Mech.	Railroad Postal Clerk, on N. Y., N. H. & H. R. R.
ARNOLD, CHAPIN TRAFFORD . . . 61 Thurston St., Providence.	Agr.	Electrical Contractor, Office 26 Custom House St., Providence.
BURLINGAME, GEO. WASHINGTON . . R. F. D. No. 2, Box 56, North Scituate.	Agr.	Farmer.
CLARK, HELEN MAY (Mrs. Wm. F. B. LEAVITT), B. L., Smith College, 1899. Essex Fells, New Jersey.		At home.
KNOWLES, JOHN FRANKLIN . . . Kingston.	Mech.	With Contractor John Bristow, Ashaway.
†MADISON, WARREN BROWN . . .	Agr.	
MATHEWSON, ERNEST HOXSIE . . . Ph. B., Brown University, 1896. 1486 Meridian Place, Washington, D. C.	Mech.	Crop Technologist in Tobacco, U. S. Department of Agriculture.
PECKHAM, REUBEN WALLACE . . . Melville Station, Newport.	Agr.	Market Gardener.
RATHBUN, WILLIAM SHERMAN . . . Barnet, Vt.	Agr.	Editor Barnet Record.
RODMAN, GEORGE ALBERT . . . New Haven, Conn.	Mech.	Building Dept., Room 24, Union Station, N. Y., N. H. & H. R. R. Co.
SARGENT, CHARLES LAWRENCE . . . Ph. D., University of Pennsylvania, 1900. 9 Thomas St., Newark, New Jersey.	Agr.	Chemist, Murphy Varnish Co.
SLOCUM, SAMUEL WATSON . . . 130 West Broad St., Westerly.	Agr.	Carpenter.
SPEARS, JOHN BARDEN . . . Foster Centre.	Agr.	Farmer.

\* It is earnestly desired that the graduates inform the college office of any permanent change of address.

† Deceased.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
SWEET, STEPHEN ADELBERT . . . Slocums.	Agr.	Farmer.
TUCKER, GEORGE MASON . . . Ph. D., Göttingen, 1899. North Scituate.	Agr.	Farmer.
WILBER, ROBERT ARTHUR . . . East Greenwich.	Mech.	Express Agent.

## 1895.

ALBRO, LESTER FRANKLIN . . . Melville Station, Newport.	Agr.	Professional Singer.
BURDICK, HOWLAND . . . Kingston.	Agr.	Instructor in Dairying, R. I. S. C.
CLARKE, CHARLES SHERMAN . . . Jamestown.	Mech.	Marine Engineer.
ELDRED, MABEL DEWITT . . . Kingston.		Instructor in Drawing, R. I. S. C.
HAMMOND, JOHN EDWARD . . . Jamestown.	Agr.	Farmer.
OATLEY, LINCOLN NATHAN . . . Wakefield.	Mech.	Contractor and Builder.
SCOTT, ARTHUR CURTIS . . . Ph. D., Univ. of Wisconsin, 1902. Austin, Texas.	Mech.	Professor of Electrical Engineering, Consulting Engineer, Univ. of Texas.
TEFFT, JESSE COTTRELL . . . Jamestown.	Mech.	Purser, Newport and Jamestown Ferryboat Co.
WINSOR, BYRON EDGAR . . . Coventry.	Mech.	Poultryman.

## 1896.

BROWN, MAY (MRS. CHARLES A. WHITE), Narragansett Pier.		At home.
GREENMAN, ADELAIDE MARIA (MRS. R. WALLACE PECKHAM) . . . Melville Station, Newport.		At home.
KENYON, ALBERT LEWIS . . . 35 Chestnut St., South Manchester, Conn.	Mech.	Farmer.
MOORE, NATHAN LEWIS CASS . . . Venice, Florida.	Agr.	Fruit-Grower; citron culture.
TABOR, EDGAR FRANCIS . . . 69 Doyle Ave., Providence.	Mech.	Calico Printer, U. S. Finishing Co., Silver Spring Branch.
*WILLIAMS, JAMES EMERSON . . .	Agr.	

## 1897.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CARMICHAEL, WELCOME SANDS . . . Shannock.	Sci.	Bookkeeper, Providence Journal Co., Providence.
CASE, HERBERT EDWARDS BROWN . Ph. B., Brown University, 1900. Graduate, Hartford Theological Seminary, 1904.	Mech.	Missionary, Marianas, Island of Guam, U. S. A.
GRINNELL, ARCHIE FRANKLIN . . . 85 Ninth St., Providence.	Mech.	Draughtsman, Brown & Sharpe Mfg. Co.
HANSON, GERTRUDE MAIE . . . Kingston.	Sci.	Teacher.
HXSIE, BESSIE BAILEY (Mrs. E. F. RUECKERT) . . . 98 Melrose St., Providence.	Sci.	At home.
KENYON, ALBERT PRENTICE . . . 10 West St., Westerly.	Mech.	Bookkeeper, Maxson & Co., Westerly.
KENYON, CHARLES FRANKLIN . . . Shannock.	Mech.	Stationary Engineer, Boston, Mass.
LARKIN, JESSIE LOUISE . . . . . 98 Beach St., Westerly.	Sci.	Genealogist.
MARSLAND, LOUIS HERBERT . . . 115 Mark Ave., Syracuse, N. Y.	Mech.	Engineering Draughtsman, with Syracuse Railroad Construction Co., 112 West Seneca St.
TEFFT, ELIZA ALICE . . . . . 16 Rocket St., Westerly.	Sci.	Teacher, East Greenwich.
THOMAS, IRVING . . . . . 2217 South Darien St., Philadelphia, Pa.	Mech.	Designer of Patterns.

## 1898.

ARNOLD, SARAH ESTELLE (Mrs. R. O. BROOKS) . . . . . 191 Franklin St., New York City.	Sci.	At home.
BARBER, GEORGE WASHINGTON . . . East Greenwich.	Agr.	Clerk.
CARGILL, EDNA MARIA (Mrs. LESTER H. BROWN) . . . Abbott Run.	Sci.	At home.
CASE, JOHN PETER . . . . . 26 Cortland St., New York City.	Agr.	With Brown Hoisting Machinery Company.
CLARK, WILLIAM CASE . . . . . Wakefield.	Sci.	Secretary and Gen. Mgr. Sea-View Railroad Co. and Narragansett Pier Elec. Light and Power Co.; Mgr. Wickford Light and Water Co.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CONGDON, HENRY AUGUSTUS . . . Kingston.	Mech.	Farmer.
FLAGG, MARTHA REBECCA . . . Hardwick, Mass.	Sci.	At home.
HARLEY, WILLIAM FERGUSON . . . 62 Hillside Ave., Providence.	Agr.	Salesman, with Messrs. Callender, McAuslan & Troup, Providence.
TURNER, HARRIETTE FLORENCE (MRS. GEO. M. TUCKER) . . . Graduate, Drexel Institute, 1900, North Scituate.	Sci.	At home.
WILSON, GRACE ELLEN (MRS. W. F. HARLEY) . . . 62 Hillside Ave., Providence.	Sci.	At home.

## 1899.

BOSWORTH, ALFRED WILLSON . . . Geneva, N. Y.	Sci.	Associate Chemist, N. Y. Agr. Exp. Sta.
BROOKS, RALPH ORDWAY . . . 191 Franklin St., New York City.	Sci.	Consulting Chemist, Bacteriologist, Microscopist, Food-Inspection Expert.
GEORGE, LILLIAN MABELLE . . . A. B., Univ. Ill., 1904.	Sci.	Student, State Library School, Albany, New York.
HARVEY, MILDRED WAYNE . . . 27 West 93d St., New York City.	Sci.	Private Secretary, National Copper Bank.
KENYON, BLYDON ELLERY . . . Austin, Texas.	Agr.	Instructor, School of Electrical Engineering, Univ. of Texas.
KNOWLES, CARROLL . . . . . 127 Hamilton St., Providence.	Mech.	Tool Designer, Brown & Sharpe Mfg. Co.
KNOWLES, HARRY . . . . . Ph. B., Brown University, 1906. 37 East Park St., Newark, N. J.	Sci.	Reporter, Newark Sunday Call.
LADD, MERRILL AUGUSTUS . . . 304 No. Boulevard, Atlanta, Ga.	Mech.	Commercial Representative for Florida and Georgia, General Electric Co.
MORRISON, CLIFFORD BREWSTER . . 543 Broad St., Providence.	Sci.	Chemist.
OWEN, WILLIAM FRAZIER . . . . Schenectady, N. Y.	Mech.	Engineering Dept., General Electric Co.
PAYNE, EBENEZER . . . . . M. D., Univ. Michigan, 1904. Glendora, California.	Sci.	Orange Grower.
PHILLIPS, WALTER CLARKE . . . Ph. B., Brown University, 1902. A. M., Brown University, 1903. 1104 W. Illinois St., Urbana, Ill.	Mech.	Instructor in English Literature, University of Illinois.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
REYNOLDS, ROBERT SPINK . . . Room 314, Gen. Office Bldg., New Haven, Conn.	Mech.	Chief Draughtsman, Bridge Dept., N. Y., N. H. & H. R. R. Co.
RICE, MINNIE ELIZABETH (MRS. ROBERT J. SHERMAN) . . Exeter Hill.	Sci.	At home.
SHERMAN, ABBIE GERTRUDE (MRS. BENJAMIN BARTON) . . 56 Pavilion Ave., Providence.	Sci.	At home.
*SHERMAN, GEORGE ALBERT . .	Mech.	
THOMPSON, SALLY RODMAN (MRS. LEWIS BALCH, JR.) . . Wakefield.	Sci.	At home.

## 1900.

BRIGHTMAN, HENRY MAXSON . .	Mech.	Heating and Ventilating Engineer, for W. J. McGuire, Ltd.
CROSS, CHARLES CLARK . . . .	Mech.	Mgr., Inspection Dept., Chalmers Motor Co.
ELDRED, JOHN RALEIGH . . .	Mech.	Instructor in Mechanical Engineer- ing, R. I. S. C.
FISON, GERTRUDE SARAH (MRS. JOHN W. ROOT) . . . .	Sci.	At home.
201 Warren St., Brooklyn, N. Y.		
FRY, JOHN JOSEPH . . . . .	Mech.	Principal, High School.
A. B., Oberlin, 1904.		
Glenbrook, Conn.		
GODDARD, EDITH (MRS. LAWRENCE B. REED) . .	Sci.	At home.
10 North St., Plymouth, Mass.		
KENYON, AMOS LANGWORTHY . .	Agr.	Dairyman, Brookside Farm.
Newburgh, N. Y.		
MUNRO, ARTHUR EARLE . . . .	Sci.	Attorney-at-Law, 49 Westminster St.
Ph. B., Brown University, 1902.		
41 George St., Providence.		
SOULE, RALPH NELSON . . . .	Sci.	
Box 4509, West Park Station, Philadelphia, Pa.		
STEERE, ANTHONY ENOCH . . . .	Mech.	Assistant Civil Engineer, New York State Barge Canal.
Fort Hunter, N. Y.		
STILLMAN, LENORA ESTELLE . .	Sci.	Teacher.
1229 Gates Ave., Brooklyn, N. Y.		
TUCKER, BERTHA DOUGLASS . .	Sci.	Dressmaker.
R. F. D. No. 2, Box 105, Swansea, Mass.		



NAME AND ADDRESS.	COURSE.	OCCUPATION.
WHEELER, CHARLES NOYES . . . 97 Garden St., Pawtucket.	Sci.	Clerk, Wm. H. Haskell Manufacturing Co.
WILSON, JOSEPH ROBERT . . . Belleville.	Mech.	Transitman, State Engineer's Office, Providence.

## 1901.

BRAYTON, CHARLES ANDREW . . . Fiskeville.	Agr.	Farmer.
BRIGGS, NELLIE ALBERTINE . . . Providence.	Sci.	Stenographer, R. I. Hospital Trust Co.
BURGESS, CHARLES STUART . . . 264 Sayles St., Providence.	Mech.	Draughtsman, Brown & Sharpe Mfg. Co.
CLARNER, LOUIS GEORGE KARL, JR. Arnold's Mills.	Sci.	Farmer.
DAWLEY, EDNA ETHEL . . . . Kenyon.	Sci.	Traveling for F. E. Compton & Co.
DENICO, ARTHUR ALBERTUS . . . 40 Park Ave., Bloomfield, N. J.	Sci.	With American Telephone and Telegraph Co., Traffic Dept.
*JAMES, RUTH HORTENSE (Mrs. HERBERT E. ROUSE) . . .	Sci.	
SHERMAN, ANNA BROWN . . . . 49 Roger Williams Ave., Providence	Sci.	Advertising.
SHERMAN, ELIZABETH AGNES . . . 41 Milk St., Boston, Mass.	Sci.	Stenographer, with Whitehall Portland Cement Co.
SMITH, HOWARD DEXTER . . . . A. M., Brown University, 1904. Ph. D., Tufts College, 1906. 11 Woodward Ave., Lowell, Mass.	Sci.	Instructor in Chemistry, Lowell Textile School.
STEEER, ROENA HOXSIE . . . . 98 Fifield St., Providence.	Sci.	Stenographer, with Anthony & Cowell Co.
WILBY, JOHN . . . . . Flat River, Missouri.	Sci.	Supply Clerk, Central Lead Co.

## 1902.

CLARKE, LATHAM . . . . . A. M., Brown University, 1903. Ph. D., Harvard University, 1905. Boylston Hall, Cambridge, Mass.	Chem.	Instructor in Chemistry, Harvard University.
FERRY, OLIVER NEEDHAM . . . . 8 Armington Ave., Providence.	Mech.	With Providence Engineering Co.
MAXSON, RALPH NELSON . . . . Ph. D., Yale University, 1905. 366 Transylvania Park, Lexington, Ky.	Chem.	Professor of Inorganic Chemistry, State University.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
PITKIN, ROBERT WILLIAM . . . Rockville, Conn., R. F. D. No. 1.	Mech.	Farmer.

## 1903.

BARBER, KATE GRACE . . . Ph. D., Yale University, 1906. 1104 L. St., N. W., Washington, D. C.	Gen. Sci.	Micro-analyst, Bureau of Chemistry, U. S. Department of Agriculture.
CONANT, WALTER AIKEN . . . Temple, N. H.	Agr.	Dairying, The Conant and Clement Farms, Hillsborough County.
GODDARD, WARREN, JR. . . . Graduate, New Church Theological School, 1907. 194 June St., Fall River, Mass.	Mech.	Minister, New Jerusalem Church.
KEEFER, EDITH CECILIA . . . 164 Herkimer St., Brooklyn, N. Y.	Biol.	Teacher, Miss Spence's School.
KENT, RAYMOND WARREN . . . A. M., Harvard University, 1904. Akron, Ohio.	Chem.	Chemist, Diamond Rubber Co.
TEFFT, ERNEST ALLEN . . . Broadway, Providence.	El. Eng.	With Amer. Locomotive Works.

## 1904.

BALLOU, WILLARD ALGER . . . 332 Lafayette Ave., Brooklyn, N. Y.	Biol.	Instructor in Mathematics, Pratt Institute.
QUINN, MARY LOUISE . . . No. 12, "The Ringsdorf," Green Bay, Wis.	Biol.	Teacher of Botany and Physiology, East High School.
RODMAN, WALTER SHELDON . . . M. S., R. I. C. A. & M. A., 1907, 12½ St. James Ave., Boston, Mass.	El. Eng.	Graduate Student, Mass. Institute of Technology.

## 1905.

CHAMPLIN, SARAH ELIZABETH . . . 102 Wesleyan Ave., Providence.	Gen. Sci.	Bookkeeper, Burt Mfg. Co., 226 Eddy St.
DOW, VICTOR WELLS . . . 34 Chapin St., Southbridge, Mass.	High. Eng.	With American Optical Co.
GILMAN, JEAN . . . . . Hampton, Va.	High. Eng.	Assistant to Director of Trade School, Hampton Institute.
HARRALL, NELLIE ARMSTRONG . . . Wakefield.	Gen. Sci.	Physical Director, Wheaton Seminary, Norton, Mass.

## 1906.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ARNOLD, BENJAMIN HOWARD . 32 Vine St., Lynn, Mass.	El. Eng.	With General Electric Co.
BERRY, WALLACE NOYES . . Interlachen, Fla.	El. Eng.	
ELKINS, MARION GRAHAM . . 10 Moody St., Amesbury, Mass.	Gen. Sci.	At home.
HARDING, LEE LAPLACE . . Lyme, Conn.	High. Eng.	Graduate Student, Yale University, 78 Lake Place, New Haven, Conn.
KEYES, FREDERICK GEORGE . Sc. M., Brown Univ., 1907. Ph. D., Brown Univ., 1909. Rhode Island Hall, Brown Univ., Providence.	Chem.	Fellow of Brown University.
NICHOLS, HOWARD MARTIN . Pittsburg, Pa.	El. Eng.	Commercial Engineer, Electric Renovator Co.
SISSON, CORA EDNA . . . Wickford.	Gen. Sci.	Student, Brown University.
WILKINSON, ALBERT EDMUND . Oakwood Farm, East Lexington, Mass.	Agr.	Farm Superintendent.

## 1907.

BARBER, ARTHUR HOUGHTON . East Greenwich.	Mech. Eng.	Student, Cornell University, Ithaca, New York.
COGGINS, CALVIN LESTER . . Sharon, Mass.	El. Eng.	Graduate Student, Wilder Laboratory, Dartmouth College, Hanover, N. H.
FERRY, JAY RUSSELL . . . 525 West 160th St., New York City.	High. Eng.	Draughtsman for Post & McCord, 44 East 23d St., New York City.
KELLOGG, DAVID RAYMOND . 176 W. Ninth Ave., Columbus, O.	Chem.	Instructor in Chemistry, Ohio State University.
KENDRICK, WINFIELD SMITH . 32 Vine St., Lynn, Mass.	El. Eng.	With General Electric Co.
LAMOND, JOHN KENYON . . Usquepaugh.	El. Eng.	Graduate Student, Yale University, 103 Park St., New Haven, Conn.
LEWIS, HARRY REYNOLDS . . Woodbine, New Jersey.	Agr.	Asst. Prof. Agriculture and Animal Husbandry, Baron de Hirsch Agricultural School.
MACOMBER, MINER SANFORD . Trudeau, N. Y.	Chem.	Graduate Student in Physiol. Chemistry, Yale University.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
TUCKER, ETHEL ALDRICH . . . Kingston.	Gen. Sci.	Assistant, Boyden Street Kindergarten, 115 Blackstone St., Woonsocket.
1908.		
DREW, JOSEPH DRAKE . . . 141 Sylvan Terrace, Harrisburg, Pa.	Chem.	In laboratory of Pennsylvania Steel Co., Steelton, Pa.
FIELD, CLESSON HERBERT . . . C. E., Lehigh Univ., 1909. 3719 Locust St., Phila., Pa.	Civ. Eng.	Instruc. in Mechanics and Structures, C. E. Dept., University of Pennsylvania.
FISKE, HERBERT ANDREW . . . Hampton, Va.	El. Eng.	Assistant, Trade School of Hampton Institute.
GARDINER, ROBERT FRANKLIN . Wakefield.	Chem.	Asst. Chemist, Bureau of Soils, Washington, D. C.
GORY, EDWARD ALLEN . . . 138 South Common St., Lynn, Mass.	El. Eng.	With General Electric Co.
KENYON, SUSAN ELNORA (Mrs. FRED K. CRANDALL) . Westerly.	Biol.	At home.
MITCHELL, CLOVIS WILLIAM . . 248 Montauk Ave., New London, Conn.	Civ. Eng.	Teacher, Mathematics and Science, Manual Training High School.
ROSE, ORPHA LILLIE . . . Peace Dale, R. F. D.	Gen. Sci.	Teacher, Rocky Brook.
SHELDON, GEORGE WARE . . . 12½ St. James Ave., Boston.	El. Eng.	Student, Mass. Institute of Technology.
SHERMAN, MARY ALBRO . . . La Grange, Me.	Agr.	Teacher.
SMITH, JOHN LEBROC . . . 27 Elm St., Webster, Mass.	El. Eng.	Sub-Master, High School.
WHIPPLE, LUCIUS ALBERT . . . Greenville.	Civ. Eng.	Teacher, Mathematics and Physical Science, The Abbott School, Farmington, Me.

## 1909.

CARGILL, RHOBIE LUCELIA . . East Greenwich.	Appl. Sci.	Instructor in Science, East Greenwich Academy.
CRAIG, JAMES MCINTYRE, . . . 1118 West 9th St., Los Angeles, Cal.	Agr.	
CRANDALL, FRED KENYON . . . R. F. D. No. 1, Westerly.	Agr.	Farmer.
FRENCH, HENRY FRANK . . . 637 Western Ave., Lynn, Mass.	El. Eng.	Testman, General Electric Co

NAME AND ADDRESS.	COURSE.	OCCUPATION.
HOWE, ALBERT MENDEL . . . Kingston.	El. Eng.	Asst. Elec. Engineering, Rhode Island State College.
KNOWLES, WALTER . . . 127 Hamilton St., Providence.	Civ. Eng.	Construction Dept., N. Y. N. H. & H. Railroad.
LEE, ALFRED ROGERS . . . 3212 7th St., N. E., Brookland, D. C.	Agr.	Junior Animal Husbandman, in Poultry Investigations, Bureau of Animal Industry, U. S. Dept. of Agriculture.
MORAN, WALTER JOHN . . . 394 Broad St., New London, Conn.	Civ. Eng.	Asst. Engineer, Biglow, Harriman Construction Co. of Boston.
MOYER, LOUIS EARL . . . Seneca Falls, N. Y.	Civ. Eng.	Transitman, Dept. State Engineer.
ROCKWELL, RUBY BELLE . . . North Bennington, Vermont.	Chem.	Teacher of Science, High School.
SMITH, ELMER FRANCIS . . . Essex Fells, New Jersey.	El. Eng.	Instructor in Mathematics and Science, and Athletic Coach, Kingsley School.
TISDALE, HARRY ROBERT . . . Box 263, New London, Conn.	Chem.	Student, Mass. Institute of Tech- nology, 20 St. James Ave., Boston.
TUCKER, ELLEN CAPRON . . . Kingston.	Gen. Sci.	At home.





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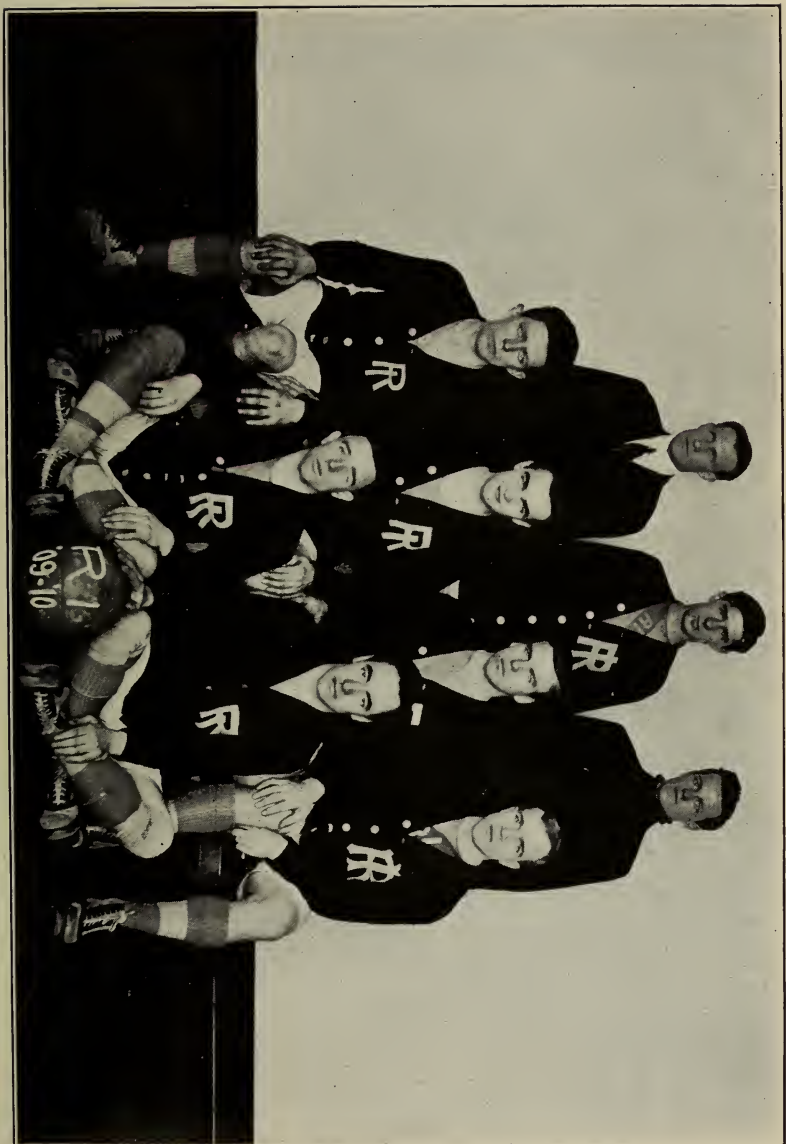
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BASKET BALL TEAM.



BULLETIN OF THE  
RHODE ISLAND STATE COLLEGE

VOL. VI. NO. 1.—SUPPLEMENT

FOR MAY, 1910

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RHODE ISLAND STATE COLLEGE  
SUMMER SCHOOL

July 11-23, 1910



DAVIS HALL

KINGSTON, RHODE ISLAND

---

PUBLISHED QUARTERLY BY THE COLLEGE

MAY, AUGUST, NOVEMBER, FEBRUARY

---

ENTERED AT KINGSTON, RHODE ISLAND, AS SECOND-CLASS MATTER



# SUMMER SCHOOL

AT THE

## RHODE ISLAND STATE COLLEGE

UNDER THE AUSPICES OF THE STATE COMMISSIONER OF PUBLIC  
SCHOOLS AND IN CO-OPERATION WITH

THE RHODE ISLAND NORMAL SCHOOL.

July 11-23, Inclusive, 1910.

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The Rhode Island State College, with the approval of the State Commissioner of Public Schools, and in co-operation with the Rhode Island Normal School, will conduct a summer school of two weeks' duration, beginning July 11 and ending July 23, 1910.

### OBJECT.

The object of the school will be to give to any persons interested in school work—teachers, principals, superintendents, clergymen, social workers, men and women—such practical information, suggestions, and hints on elementary agriculture, nature study, school gardens, domestic science and art, rural economics, as can be imparted in so short a time.

### THE NEW MOVEMENT IN EDUCATION.

Teachers and others who are abreast of the times know that there is to-day a profound and far-reaching movement to revitalize the schools by re-establishing a direct connection between them and the vocational life of the people. Those teachers are wise who take measures to adapt themselves to the needs of their time. As an opportunity to this end, the College is offering these courses.

### EXTENT AND CHARACTER OF THE MOVEMENT.

In a recent address, Hon. Walter E. Ranger characterized the movement toward agricultural education, as follows:

. . . "Following the nature-study movement and related to it, the study of agriculture in public schools, through wide-spread dis-



cussion and phenomenal progress, has become within ten years a matter of great educational interest, and even promises in connection with other forces to work in time an evolution in public school education.

"Agriculture has been taught for nearly half a century in land-grant or national colleges; but only one agricultural high school was reported twelve years ago, and only eighteen high schools taught agriculture two years ago. Now there are more than one hundred agricultural high schools in seventeen different states, and, besides, several thousand high schools, in twenty-three states, giving instruction in agriculture. . . . The introduction and extension of agricultural instruction in elementary schools is equally significant. Recent data show that such instruction is given in the rural schools of forty-four states. Fourteen states by law require that the elements of agriculture be taught in rural schools, and twelve require it in graded schools. Twenty-eight states have enacted special laws, permitting such instruction; while in others, like Rhode Island, local authorities are free to introduce the subject.

. . . "It does not mean simply a new subject of study. It involves new means, new methods, new values, new opportunities, and new aims in school education. It means a transformation of our courses of study, a closer relation between the school-life and home-life of the child, and in school activities new forms, new life and a new spirit. . . . To keep the pupil in touch with his environment, to open the doors of school wide to the truth and beauty and goodness of nature, to relate the pupil's instruction within the school to his experience without, to make useful things means of culture, to honor the present and future life of the child, and to enlarge his vision of coming life, are subjects of agricultural education."

#### FACILITIES.

It is desired that those who attend the summer school shall reside at the College during the two weeks in order that the daily program may cover more time during the day. It will be possible, however, for those who so desire to use the morning and afternoon trains to

go back and forth. Trains arrive from either direction at 7:45 A. M., and leave in either direction shortly after 5 P. M. Carriages from the College will meet these trains, if necessary.

•Rooms for ladies will be furnished in Davis Hall, the women's dormitory. Men will have rooms in East Hall.

It is hoped that those who attend the summer course will register



ON THE ROAD TO THE COLLEGE

as far as possible in advance of the opening. Rooms will be assigned in the order of registration.

Books, stationery, etc., may be purchased at the college bookstore.

Small magnifying glasses will be needed, and field or opera glasses will be useful.

The college is admirably situated and equipped for a summer school. No part of the State offers a pleasanter summer residence.

The facilities for nature study are unsurpassed. The physiographic features of the country are varied and instructive. A large variety of land and water plants and insects are available. Special

emphasis will be laid on the study of common plants, insects, and birds found in the vicinity.

In the school-garden work, daily observations will be made of the planting, growth, and care of flowers and vegetables in the general gardens on the college grounds. In addition, specimen school-gardens will be started in the spring and conducted during the summer. A small piece of land will be used for actual demonstration and practice in laying out and planting.



CHEPUXET RIVER WITH POND.

In elementary agriculture, there are gardens, orchards, cattle, horses, poultry, experimental plots, fields and groves to serve as means of instruction. A complete library for reference is also at hand.

The home economics laboratory is well equipped and will be in daily use.

The classrooms and laboratories of the various departments,—chemistry, botany, zoölogy, etc.,—will be fully utilized.

The corps of instructors will be drawn from the College faculty and the Normal School, together with occasional lectures from out-side specialists.

Excursions to points of interest will be arranged as time and occasion may demand and permit. It is desired, however, that the school constitute itself for serious work and do not degenerate into a mere summer outing.

The boarding facilities of the College are adequate, and will meet all reasonable demands.

#### EXPENSES.

There will be no charge for tuition. Board will cost \$3.75 per week. Rooms, including light, will cost \$1.75 per week. The rooms are furnished with bedsteads, mattresses, and other necessary furniture, but those who come to take work in the courses must provide or bring with them bedding, towels, napkins, etc. The only other necessary expense from the College side will be the proportionate share of expense for excursions undertaken.

#### INSTRUCTION.

In general the work of the course will be divided into hour periods. Four periods in the forenoon will be given to lectures and discussions, and the afternoon periods to laboratory work, demonstrations, round-table discussions, and short excursions.



QUAIL

The course comes during the time of year when people, and especially teachers who work hard indoors all winter, will want to spend as much time in the open air as possible. For this reason all lectures and exercises, so far as practicable, will be given out of doors. It is suggested that students bring with them campstools or sofa cushions for use at out-door lectures. A few general lectures will be arranged for the evening.

1. In the Nature-Study course the following subjects will be considered: physiography, as illustrated by local conditions; methods in zoölogy; birds; insects; plant life; nature-study drawing; outdoor sketching.



2. The course in Elementary Agriculture will include as topics for lectures and demonstrations: general agriculture; orcharding; small fruits; vegetable gardening; planting and care of school and home grounds; forestry; floriculture; animal husbandry; dairying.

3. In School Gardening the object will be to show by a series of lectures and demonstrations what preparations should be made, what methods adopted, and what plants grown, in handling a class in this subject.

4. In Domestic Economy, home sanitation, household management, foods and dietaries, home decoration and furnishing, textiles and sewing, etc., will be considered.

5. Under the head of Rural Economics and Sociology will be considered some of the larger problems of farm life, such as the marketing of farm products, farm labor, ownership and tenancy, the rural school, agricultural education, farmers' organizations, the country church, etc.

Anyone attending will be able to take three of the five courses here named.

#### CONNECTION WITH THE RHODE ISLAND NORMAL SCHOOL.

At the present writing it is undecided whether the Normal School will offer summer courses the coming summer or not. Should it offer such courses, they will be so adjusted as to allow students to pass directly from our courses to those at the Normal; and they will connect, both in time and subject-matter. Should courses not be offered at the Normal School, it is the intention, with the help of the Normal faculty, to offer here courses on methods in history, English, etc., parallel with those announced in the foregoing pages.

Further announcement will be made later.

Registration and further questions may be addressed to

A. E. STENE, *Superintendent of Extension Department,*  
*Rhode Island State College,*  
*Kingston, R. I.*







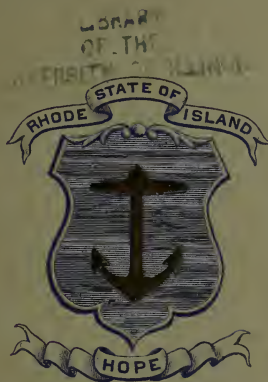
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BULLETIN OF RHODE ISLAND STATE COLLEGE

VOL. VII. NO. 1.

FOR MAY, 1911.

CATALOGUE OF THE COLLEGE.



REPORT OF BOARD OF MANAGERS--PART III.

KINGSTON, R. I.

1911.

PUBLISHED QUARTERLY BY THE COLLEGE

MAY, AUGUST, NOVEMBER, FEBRUARY

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E. L. FREEMAN COMPANY, STATE PRINTERS, PROVIDENCE.



# TWENTY-THIRD ANNUAL REPORT

OF THE

## BOARD OF MANAGERS

OF

LIBRARY  
OF THE

UNIVERSITY OF RHODE ISLAND

# RHODE ISLAND STATE COLLEGE,

MADE TO THE

General Assembly at its January Session, 1911.

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## PART III—CATALOGUE.

Part I—General Report—printed under separate cover.

Part II—Experiment-Station Report—printed under separate cover.

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Providence, R. I.

E. L. Freeman Company, State Printers.

1911.





## Rhode Island State College.

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### Corporation.

HON. ROBERT S. BURLINGAME.....	NEWPORT COUNTY.
HON. CHARLES ESTES.....	BRISTOL COUNTY.
HON. CHARLES DEAN KIMBALL.....	PROVIDENCE COUNTY.
HON. THOMAS G. MATHEWSON.....	KENT COUNTY.
HON. J. V. B. WATSON.....	WASHINGTON COUNTY.
HON. WALTER E. RANGER..	STATE COMMISSIONER OF SCHOOLS, <i>ex-officio</i> .
HON. PHILIP A. MONEY.....	MEMBER OF STATE BOARD OF AGRICULTURE.

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### Officers of the Corporation.

HON. CHAS. DEAN KIMBALL, President.....	PROVIDENCE.
HON. ROBERT S. BURLINGAME, Clerk and Treasurer.....	NEWPORT.

## Report.

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*To His Excellency Aram J. Pothier, Governor, and the Honorable General Assembly of the State of Rhode Island and Providence Plantations, at its January Session, 1911:*

I have the honor to submit herewith Part Three of the Twenty-Third Annual Report of the Board of Managers of Rhode Island State College, as required by law.

CHARLES DEAN KIMBALL,

*President of the Board of Managers of Rhode Island State College.*

## Faculty and Other Officers.

---

HOWARD EDWARDS, A. M., LL. D.,

PRESIDENT,

*Professor of Political Economy and Social Science.*

HOMER JAY WHEELER, PH. D.,

*Professor of Geology.*

HARRIET LATHROP MERROW, A. M.,

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First Lieutenant Sixth Infantry, United States Army,

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*Dean of Women and Librarian.*

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THOMAS CARROLL RODMAN,

*Instructor in Woodwork.*

MABEL DEWITT ELDRED, B. S.,

*Instructor in Drawing.*

HOWLAND BURDICK, B. S.,

*Instructor in Dairying.*

DANIEL JOSEPH LAMBERT,

*Instructor Poultry Keeping.*

JOHN RALEIGH ELDRED, B. S.,

*Instructor in Mechanical Engineering.*

FRANCIS HERVEY SMITH, M. S.,

*Instructor in Chemistry.*



FLORENCE H. MYRICK, B. S.,

*Instructor in Languages.*

HERBERT SETON EAMES, B. S.,

*Instructor in Mechanical Engineering.*

ERNEST KINSEY THOMAS,

*Instructor in Nature Study and School Gardening, Extension Department.*

FRANK HARTWELL BILLS, B. S.,

*Instructor in Mathematics and Civil Engineering.*

PAUL CLOKE, E. E.,

*Instructor in Physics and Electrical Engineering.*

RUTH C. HADLEY, A. B.,

*Instructor in German.*

NELLIE ARMSTRONG HARRALL, B. S.,

*Instructor in Physical Training for Women.*

EMILE ARTHUR MALLETTE,

*Florist.*

LUCY COMINS TUCKER,

*Registrar and Secretary to the President.*

ALICE ELIZABETH BEALE,

*Bursar.*

JENNIE CRANDALL THOMPSON.

*Bookkeeper.*

## Lectures.

### Poultry Course.

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E. W. Brown, Old Mystic, Conn., POULTRY INSTRUCTION.

George A. Cosgrove, Willington, Conn., A ONE MAN POULTRY FARM.

I. F. Dexter, Providence, R. I., MATING AND BREEDING LEGHORNS.

Samuel Knowles, Lexington, Mass., POULTRY KEEPING AS AN AVOCATION.

John H. Robinson, Boston, Mass., POULTRY HOUSES. FEEDING. BREEDING.  
Three lectures.

F. L. Sewell, Niles, Mich., STANDARD TYPES. Two lectures. Illustrated.

Henry D. Smith, Rockland, Mass., CAPONS AND CAPONIZING. Three lectures and  
a demonstration.

F. H. Stoneburn, Storrs, Conn., THE GOOD, BAD, AND INDIFFERENT ADVERTISED  
SYSTEMS OF POULTRY KEEPING.

E. Collins Tefft, Wakefield, R. I., POULTRY AND FRUIT CULTURE.

Carroll H. Magoon, Kingston, R. I., PLANS OF POULTRY FARMS. ESTIMATES OF  
INCOME. Two lectures.

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### Farmers' Week.

H. W. Collingwood, New York, N. Y., THE CONSUMER'S DOLLAR.

J. W. Sanborn, Gilmanton, N. H., FARM ADMINISTRATION.

Wilfrid Wheeler, Concord, Mass., STRAWBERRY CULTURE.

## Experiment-Station Staff.

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HOWARD EDWARDS, M. A., LL. D.....	{ President of the College. Ex-officio Member.
H. J. WHEELER, Ph. D.....	Director; Agronomy.
BURT L. HARTWELL, Ph. D*.....	Chemistry.
George E. ADAMS, B. S.....	Horticulture.
PHILIP B. HADLEY, Ph. D.....	Biology.
S. C. DAMON, B. S.....	Assistant, Agronomy.
EVERETT F. SOUTHWICK, B. Sc.....	Assistant, Agronomy.
JOHN I. FALCONER, B. Sc.....	Assistant, Agronomy.
JOHN E. SEABRIGHT, B. A.....	Assistant, Chemistry.
L. F. WHIPPLE.....	Assistant, Chemistry.
FREDERICK S. HAMMETT, A. B.....	Assistant, Chemistry.
ROBERT A. LICHTENTHAELER, M. S.....	Assistant, Chemistry.
F. R. PEMBER, M. S.....	Assistant, Plant Physiology.
E. A. MALLETTE.....	Assistant, Floriculture.
CARROLL H. MAGOON.....	Assistant, Biology.
ELIZABETH E. AMISON, B. S.....	Assistant, Biology.
NATHANIEL HELME.....	Meteorology.
E. ELIZABETH MEEARS.....	Librarian.
EDITH L. KENNISON, A. B.....	Stenographer and Accountant.
ELEANOR E. GOULD.....	Stenographer.

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*The publications of the Station will be mailed free, upon request, to residents of Rhode Island. Suggestions as to how the station can aid the state are gladly received. Visitors are always welcome. Railway station, telegraph, express, and post-office—Kingston, Rhode Island. Long distance telephone, Narragansett Pier Exchange.*

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\*In charge of experiments in plant physiology and animal feeding.

## College Calendar.

Wednesday, September 20.....	Chapel Exercises, 8:20 A. M.
Registration, examination of entering and conditioned students, 9:00 A. M.	
Thursday, September 21.....	Recitations begin, 8:20 A. M.
Tuesday, November 7.....	Election Day.
Wednesday, November 29, 12:15 P. M. }	Thanksgiving Recess.
Monday, December 4, 8:20 A. M. }	
Friday, December 22, 12:15 P. M. }	Christmas Recess.
Wednesday, January 3, 1912, 8:20 A. M. }	
Friday, February 9, 4:35 P. M.....	First Term ends.
Tuesday, February 13.....	Entrance Examination, 9:00 A. M.
Wednesday, February 14.....	Second Term begins, 8:20 A. M.
Registration, 9:00 A. M. Recitations begin 1:00 P. M. *	
Sunday, February 11.....	Day of Prayer for Colleges.
Friday, April 5.....	Good Friday.
Thursday, February 22.....	Washington's Birthday.
Friday, May 10.....	Arbor Day.
Thursday, May 30.....	Memorial Day.
Sunday, June 16.....	Baccalaureate Address.
Thursday, June 20.....	Commencement Exercises.
Friday, June 21.....	Entrance Examination, 9:00 A. M.

## CALENDAR.

1911.

1912.

1911.							1912.						
JUNE.	MAY.	APRIL.	MARCH.	FEB.	JAN.		JUNE.	MAY.	APRIL.	MARCH.	FEB.	JAN.	
S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7	7	8	9	10	11	12	13
8	9	10	11	12	13	14	14	15	16	17	18	19	20
15	16	17	18	19	20	21	21	22	23	24	25	26	27
22	23	24	25	26	27	28	28	29	30	31	1	2	3
29	30	31	1	2	3	4	4	5	6	7	8	9	10
5	6	7	8	9	10	11	11	12	13	14	15	16	17
12	13	14	15	16	17	18	18	19	20	21	22	23	24
19	20	21	22	23	24	25	25	26	27	28	29	30	31
26	27	28	29	30	31	1	26	27	28	29	30	31	1
2	3	4	5	6	7	8	2	3	4	5	6	7	8
9	10	11	12	13	14	15	3	4	5	6	7	8	9
16	17	18	19	20	21	22	10	11	12	13	14	15	16
23	24	25	26	27	28	29	17	18	19	20	21	22	23
30	31	1	2	3	4	5	24	25	26	27	28	29	30
1	2	3	4	5	6	7	1	2	3	4	5	6	7
8	9	10	11	12	13	14	8	9	10	11	12	13	14
15	16	17	18	19	20	21	15	16	17	18	19	20	21
22	23	24	25	26	27	28	22	23	24	25	26	27	28
29	30	31	1	2	3	4	29	30	31	1	2	3	4
5	6	7	8	9	10	11	5	6	7	8	9	10	11
12	13	14	15	16	17	18	12	13	14	15	16	17	18
19	20	21	22	23	24	25	19	20	21	22	23	24	25
26	27	28	29	30	31	1	26	27	28	29	30	31	1
2	3	4	5	6	7	8	2	3	4	5	6	7	8
9	10	11	12	13	14	15	9	10	11	12	13	14	15
16	17	18	19	20	21	22	16	17	18	19	20	21	22
23	24	25	26	27	28	29	23	24	25	26	27	28	29
30	31	1	2	3	4	5	30	31	1	2	3	4	5
6	7	8	9	10	11	12	6	7	8	9	10	11	12
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20	21	22	23	24	25	26	20	21	22	23	24	25	26
27	28	29	30	31	1	2	27	28	29	30	31	1	2
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22	23	24	25	26	27	28	22	23	24	25	26	27	28
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26	27	28	29	30	31	1	26	27	28	29	30	31	1
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23	24	25	26	27	28	29	23	24	25	26	27	28	29
30	31	1	2	3	4	5	30	31	1	2	3	4	5
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20	21	22	23	24	25	26	20	21	22	23	24	25	26
27	28	29	30	31	1	2	27	28	29	30	31	1	2
3	4	5	6	7	8	9	3	4	5	6	7	8	9
10	11	12	13	14	15	16	10	11	12	13	14	15	16
17	18	19	20	21	22	23	17	18	19	20	21	22	23
24	25	26	27	28	29	30	24	25	26	27	28	29	30
1	2	3	4	5	6	7	1	2	3	4	5	6	7
8	9	10	11	12	13	14	8	9	10	11	12	13	14
15	16	17	18	19	20	21	15	16	17	18	19	20	21
22	23	24	25	26	27	28	22	23	24	25	26	27	28
29	30	31	1	2	3	4	29	30	31	1	2	3	4
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12	13	14	15	16	17	18	12	13	14	15	16	17	18
19	20	21	22	23	24	25	19	20	21	22	23	24	25
26	27	28	29	30	31	1	26	27	28	29	30	31	1
2	3	4	5	6	7	8	2	3	4	5	6	7	8
9	10	11	12	13	14	15	9	10	11	12	13	14	15
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23	24	25	26	27	28	29	23	24	25	26	27	28	29
30	31	1	2	3	4	5	30	31	1	2	3	4	5





## RHODE ISLAND STATE COLLEGE.

### Foundation.

The college is one of the so-called land-grant colleges. Of the purpose of these institutions Senator Morrill, the author of the national legislation which brought them into existence in all the states, says:

"The fundamental idea was to offer an opportunity in every state for a liberal and larger education to larger numbers, not merely those destined to sedentary professions, but to those needing higher instruction for the world's business, for the industrial pursuits and professions of life." Again he says: "It was to give a chance to the industrial classes of the country to obtain a liberal education, something more than what was bestowed by our universities and colleges in general, which seemed to be based more on the English plan of giving education only to what might be called the professional classes, in law, medicine and theology."

The college has also a well-defined investigative purpose in its experiment station, organized as a department of the college and endowed by the general government.

The resources of the college are as follows:

(1) The interest on \$50,000, which was the net amount received by the state from the sale of its scrip for 120,000 acres of land, granted by the general government in 1862. This fund came to the college in 1894.

(2) The annual appropriation of \$15,000 from the general government, under what is known as the Hatch Act of 1887. This fund is exclusively for experimental purposes.

(3) The annual appropriation of \$25,000 from the general government under the second Morrill Act of 1890. This fund is for teaching the subjects distinctly named and specified in the act, as follows: "to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special

reference to their applications in the industries of life, and to the facilities for such instruction."

(4) The funds coming from the general government of the state under the Adams Act of 1906, yielding each year \$15,000. This fund is exclusively for experimental purposes.

(5) The funds from the general government under the Nelson Amendment of 1907, amounting on July 1, 1907, to \$5,000, and increasing yearly thereafter by \$5,000 until the whole, in 1911, will amount to \$25,000. This amendment is simply an extension of the 1890 Morrill grant and carries the same restrictions.

(6) The annual maintenance fund from the state, of \$25,000, used for all the purposes for which the funds of the general government can not be used: *e. g.*, for extension work; for executive and administrative work; for heating, lighting and maintenance of buildings; for the teaching of modern languages other than English, of history and civics; for student labor, maintenance of grounds, roads, etc.

The college was founded in 1888 as an agricultural school. In 1892 it was incorporated as a college. The courses of study have been on a college basis since 1892; the requirements for a degree were raised in 1898; and the curriculum was again thoroughly revised during the years 1906-07 and 1907-08. The course in home economics for young women was introduced in 1908.

## Object and Organization.

The function of the Rhode Island State College is to aid in fostering the industrial life of the state, at least in so far as pertains to agriculture, manufactures, transportation, and home-making. This it does in three ways: 1. By the investigation and discovery of new truth more or less directly applicable in the industries. 2. By the direct distribution of industrial information to the people. 3. By the organization and administration of definite courses of instruction designed to fit young men and young women for effective work in the industrial pursuits.

The first of these duties is performed by the

## Experiment Station,

for a description of the work of which the reader is referred to the report of the director, constituting Part II of the Report of the Board of Managers for the current year. A statement of its staff organization may be found on page 9 of this catalogue.

The experiment station takes part, also, in the second phase of the college activities, by distributing its bulletins to all that desire and apply for them. In order, however, more fully and directly to bring the college and its work into touch with the people, a

## College Extension Department

has been organized, and is in active operation.

The purpose of this department is to carry the instruction of the college to those who cannot come to it for study. Whenever necessary and possible, visits will be made to any part of the state to examine farms, orchards, and gardens; to identify injurious insects or plant diseases, or give instruction in regard to methods of treatment; or to examine soils with a view to suggesting remedies for lack of fertility. General plans for laying out farms and for carrying out the details of any farm operation, will be given the fullest consideration. The college is available for consultation at any time in regard to any problem of the farm, garden, or orchard. The fullest correspondence is invited, and conscientious consideration will be given to every letter received. In conjunction with this phase of the work popular bulletins are issued from time to time, which endeavor to present the gist of agricultural information on various topics without the uninteresting detail of the regular experiment-station bulletin.

Whenever possible, arrangements will be made for demonstrations or lectures by members of the college faculty and experiment-station staff when called for by any agricultural meeting or neighborhood gathering. A number of lectures on various subjects have been prepared, which can be secured on short notice by any gathering or organization within the state. These lectures are free, the only charge being the traveling expenses of the speaker. A complete list of the lectures, together with such other information in regard to them as may be of interest, has been prepared and may be obtained by sending a postal-card request to the department.

An important part of this extension work is to be the encouragement of home study and the conducting of correspondence courses. For the present, time and funds will not permit the carrying out of this plan, but advice will be given to any person wishing to take up home study regarding courses of reading, books, and other literature which may be necessary in connection with such work.

Under the direction of the state commissioner of public schools, books on agriculture, home economics, and related subjects, have been purchased, and, together with a selected list of bulletins and reports, have been made up into a traveling library to be sent out over the state. The demand for this library has been so great that Commissioner Ranger has recently purchased books for four more libraries, which are now ready for distribution. If these are not sufficient, books for additional libraries will be purchased as the demand increases.

The Extension Department aims to encourage nature study, school gardening, and elementary agriculture, and for this purpose maintains the following lines of extension work:

1. NATURE STUDY.—This is encouraged through the publication of a little leaflet called the Nature Guard, and the organization of boys and girls in the schools and elsewhere into bands called Nature Guard bands, the purpose of which is to awaken in its members a livelier interest in the things of outdoor life. It endeavors to stimulate the powers of observation and lay the foundation for a simple, rational education which shall give the individual a love for nature and a sympathy with his environment and furnish him with a means of making life more useful and more enjoyable, whether lived in the country or in the city.

2. SCHOOL GARDENS.—The extension department endeavors to aid schools and organizations in carrying on children's gardens. An instructor is employed who gives a large part of his time to this work and who gives the children direct personal instruction in methods of preparing the ground, planting, cultivating, and harvesting garden crops.

Home gardens are also encouraged, and advice given through correspondence and by circulars about the best methods of cultivating garden crops. At the suggestion of the department, the Washington County Agricultural Society and the Newport County Agri-



cultural Society will offer prizes for exhibits from children's gardens, and for seed and plant collections.

3. **ELEMENTARY AGRICULTURE.**—As an aid to the introduction of elementary agriculture in the public schools, the department has undertaken to promote, in coöperation with various other educational and agricultural organizations in the state, a boys' corn growing contest. A premium list, for which the Board of Agriculture, the college, and a number of other organizations, business firms, and individuals, have provided prizes, has been issued, also a bulletin giving methods of growing and exhibiting corn. A state exhibition, for which the State Horticultural Society will provide space, will be held in the autumn. Granges, church organizations, Y. M. C. A.'s and schools have been asked to aid in forming boys' clubs, and in addition, where clubs cannot well be formed, individuals have been encouraged to take part in the contest.

Further notes in regard to this work are given in leaflets and circulars issued by the extension department, and correspondence from anyone who may be interested in regard to the same is invited.

## The College as an Educational Agency.

In its third form of activity, the purpose and work of the Rhode Island State College is to give college training and culture to young men and young women, not in spite of, but through and with vocational studies. Its courses are intended, first of all, to make the student a self-supporting unit in society, a positive force for social advancement, able and willing not only to maintain himself, but also to carry something of the common social burdens that always weigh upon the thoroughly efficient worker.

### I. THE FOUR-YEAR COURSES.

To this end certain college courses, intended to fit men and women for efficiency and leadership in well-defined life-activities, have been prepared. These courses are all founded upon training in mathematics, pure and applied; the English language as a means of intercommunication; and the sciences that deal with matter, force, and life as applied more directly to agriculture, the mechanic arts, and home economics. In the pursuit of these vocational studies, the

effort is to accumulate an array of knowledge that, in the activities of industrial life, must be always practically serviceable, and, at the same time, to gain a disciplinary training both of brain and of muscle and nerve that make for practical effectiveness. These courses, moreover, recognizing that a college course should include not only intellectual training and the knowledge and skill requisite for bread-winning, but also preparation for citizenship, for moral and social life, have intertwined with the vocational work and study previously mentioned, the subjects that most directly make for culture and morality—history, economics, literature, languages, ethics, psychology, and sociology. These are ranked as of equal importance with the bread-winning studies.

The college courses just discussed are four years in length, and base themselves directly on the work of the four years of the high schools. They thus become an integral part of the school system of the state. Young men and young women, citizens of the state and having requisite high-school training, are admitted to these courses without charge for tuition.

The four-year courses thus offered are the agricultural course, the engineering course, the teachers' course in applied science, and the course in home economics.

### The Agricultural Course.

The agricultural course is intended to give thorough preparation for taking charge of and operating a piece of landed property. Its work is centered around instruction and practice in horticulture, general farming, and animal husbandry (more especially as applied to dairying and the poultry industry). The course consists of practical work combined with thorough study of the sciences bearing directly on such work, viz.: botany, chemistry, geology, zoölogy, anatomy, physics, and entomology. In addition, it embraces the culture and mental discipline arising from the study of mathematics, English composition and rhetoric, history, drawing, modern languages, economics, and English literature. The course is planned to give the student a full and rounded development as worker, as citizen, and as man.

All agricultural students will follow the same work in the first two years; but, at the beginning of the Junior year, with the required work for all students in the course, three optional lines of work are

offered, one of which must be selected by the student and followed until graduation. The three lines offered are agronomy, horticulture, and animal husbandry. No option and no subject will be given for which a number of students sufficient to warrant giving it has not applied. The tabulated course follows:

### Freshman Year.

FIRST TERM.	CREDITS.*	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I).....	3	Rhetoric and Composition (English I).....	3
German or French (I or II).....	3	German or French (I or II).....	3
Algebra (Math. I) Trigonometry (Math. II).....	5	General Chemistry and Qualitative Analysis (Chem. II).....	3 [1½]
General Chemistry (Chem. I).....	2 [1½]	General Botany (Botany I).....	1 [2]
General Botany (Botany I).....	1 [2]	Stock Judging (An. Husb. I).....	[2]
Propagation of Plants (Hort. I).....	1 [1]	Breeds (An. Husb. III).....	2
Drawing, Pencil (Fr. Dr. II).....	[1]	Poultry (An. Husb. XII).....	[1]
Drill (Mil. Sci. and T. I).....	[1]	Spraying and Pruning (Hort. IV).....	1 [1]
Theory (Mil. Sci. and T. II).....	1	Drill (Mil. Sci. and T. I).....	[1]
		Theory (Mil. Sci. and T. II).....	1

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I).....	1	Debating (Oral Expr. II).....	1
German or French (II).....	3	German or French (II).....	3
Qualitative Analysis (Chem. III).....	[3]	Organic Chemistry (Chem. IV).....	3 [1]
Economic Botany (Botany II).....	1 [2]	Descriptive Physics (Physics I).....	5
General Zoölogy (Zoöl. I).....	2 [2]	Physiology (Zoöl. III).....	3 [1]
Forage Plants (Agron. II).....	2	Geology (I).....	2
Vegetable Gardening (Hort. II).....	2	Drill (Mil. Sci. and T. I).....	[1]
Surveying (Civ. Eng. I).....	1 [2]		
Drill (Mil. Sci. and T. I).....	[1]		

### Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Principles of Criticism (English IV)....	4	Debating (Oral Expr. III).....	1
Debating (Oral Expr. III).....	1	Industrial History (History I).....	4
Agricultural Chemistry (Chem. XIV)....	3 [1]	Forestry (Botany IV).....	2
Soils and Fertilizers (Agron. III).....	4 [1½]	Economic Entomology (Zoöl. IV).....	3 [1]
Dairy Practice (An. Husb. VII).....	1 [1½]	Farm Crops (Agron. IV).....	3 [1]
Fruit Culture (Hort. III).....	2	Farm Management (Agron. VII).....	2
Drill (Mil. Sci. and T. I).....	[1]	Farm Machinery (Agron. VI).....	2 [1]
		Drill (Mil. Sci. and T. I).....	[1]

### Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II), Oratory (Oral Expr. IV).....	5	Civil Government (History II), Principles of Criticism—The Drama (English V), Oratory (Oral Expr. IV).....	5
Agric. Experimentation (Agron. X)....	3	Breeding (An. Husb. IV).....	3
Plant Breeding (Agron. XI).....	3	Vet. Medicine (An. Husb. X).....	3
Feeding (An. Husb. VI).....	3	Landscape Gardening (Hort. XIII)....	2 [1]
Landscape Gardening (Hort. XIII)....	2 [1]	Elective.....	8
Elective.....	5	Drill (Mil. Sci. and T. I).....	[1]
Drill (Mil. Sci. and T. I).....	[1]		

\* A credit is given for one recitation per week; or for one exercise of two hours per week in laboratory, field, or shop. Credits for the latter are enclosed in brackets.

## The Engineering Course.

The engineering course has the same duration and the same general plan as the agricultural course. Students will follow the course as laid down until the second half of the Sophomore year, at which time they must elect one of the four optional lines offered, viz.: mechanical, electrical, civil, and chemical engineering. Any line of work for which the number of applicants is insufficient to warrant giving it, the college reserves the right to withdraw.

The course is arranged to prepare young men for skilled and efficient work in the great manufacturing and commercial industries of the state; in the development of electricity as a motive force and in its thousand-fold other applications to the arts and to the life of society; in the activities of the new road-building era upon which we are entering; and in the applications of chemistry as now found in the great industrial establishments. At the same time, in this as in all other courses, it is not forgotten that the man in not a mere lever in his own machinery, and the effort after breadth and completeness of life is steadily maintained. The tabulated course follows:

### Freshman Year.

For the first year the course is the same for all students of engineering.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I)...	3	Rhetoric and Composition (English I)...	3
German or French (I or II).....	3	German or French (I or II).....	3
Algebra (Math. I), Trigonometry (Math. II).....	5	Trigonometry, complete (Math. VII), Analytics (Math. VIII).....	5
General Chemistry (Chem. I).....	2 [1½]	General Chemistry and Qualitative Analysis (Chem. II).....	3 [1½]
Mechanical Drawing (Mech. Eng. I)....	[3]	Mechanical Drawing (Mech. Eng. I)....	[2]
Forge and Foundry (Mech. Eng. II)....	[3]	Pattern Making (Mech. Eng. III).....	[3]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]
Theory (Mil. Sci. and T. II).....	1	Theory (Mil. Sci. and T. II).....	1

### MECHANICAL ENGINEERING.

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Exper. I)...	1	Debating (Oral Exper. II).....	1
Qualitative Analysis (Chem. III).....	[3]	General Physics (Physics II).....	4
General Physics (Physics II).....	4	Laboratory (Physics III).....	[1½]
Laboratory (Physics III).....	[1½]	Calculus, completed (Math. XI).....	5
Analytics, completed (Math. IX), Calculus (Math. X).....	5	Graphic Statics (Mech. Eng. IV).....	2
Descriptive Geometry (Mech. Eng. V)...	1 [2]	Mechanical Drawing (Mech. Eng. VI)...	[3]
Surveying (Civ. Eng. I).....	1 [2]	Machine Shop (Mech. Eng. VII).....	[3]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]







## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I.), Civil Government (History II), Oratory (Oral Expr. IV).....	5	Civil Government (History II), Principles of Criticism—The Drama (English V), Oratory (Oral Expr. IV).....	5
Theory of Alternating Currents (El. Eng. V).....	3	Theory of Alternating Currents (El. Eng. V).....	3
Alternating-Current Laboratory (El. Eng. VI).....	[3]	Alternating Current Laboratory (El. Eng. VI).....	[3]
Telephone Engineering (El. Eng. VIII).....	1	Design of Electrical Machinery (El. Eng. VII).....	[3]
Assigned Work (El. Eng. XII).....	[3]	Electric-Railway Engineering (El. Eng. XI).....	2
Experimental Engineering c (Mech. Eng. XVII).....	2 [2]	Assigned Work (El. Eng. XII).....	[3]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]
Transmission of Energy (El. Eng. X) ..	2		
Power Plants (Mech. Eng. XXI).....	2		

## CIVIL ENGINEERING.

## Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I)....	1	Debating (Oral Expr. II).....	1
Qualitative Analysis (Chem. III).....	[3]	General Physics (Physics II).....	4
General Physics (Physics II).....	4	Laboratory (Physics III).....	[1½]
Laboratory (Physics III).....	[1½]	Calculus completed (Math. XI).....	5
Analytics, completed (Math. IX), Calculus (Math. X).....	5	Graphic Statics (Mech. Eng. IV).....	2
Descriptive Geometry (Mech. Eng. V)....	1 [2]	Mechanical Drawing (Mech. Eng. VI) ..	[3]
Surveying (Civ. Eng. I).....	1 [2]	Machine Shop (Mech. Eng. VII).....	[1½]
Drill (Mil. Sci. and T. I).....	[1]	Topographic Surveying (Civ. Eng. II)....	1 [2]
		Drill (Mil. Sci. and T. I).....	[1]

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Principles of Criticism (English IV)....	4	Debating (Oral Expr. III).....	1
Debating (Oral Expr. III).....	1	Industrial History (History I).....	4
Graphic Statics. (Civ. Eng. IV).....	2	Railroad Engineering (Civ. Eng. III b).....	3
Steam Engineering (Mech. Eng. XXV).....	3	Applied Mechanics (Mech. Eng. X), Hydraulics (Mech. Eng. XI).....	5
Applied Mechanics (Mech. Eng. X).....	5	Experimental Engineering b (Mech. Eng. XVI).....	[2]
Railroad Engineering (Civ. Eng. III a) ..	5	Geology (I).....	2
Drill (Mil. Sci. and T. I).....	[1]	Roads and Pavements (Civ. Eng. V)....	3 [1]
		Drill (Mil. Sci. and T. I).....	[1]

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II), Oratory (Oral Expr. IV).....	5	Civil Government (History II), Principles of Criticism—The Drama (English V), Oratory (Oral Expr. IV).....	5
Experimental Engineering c (Mech. Eng. XVII) .....	2 [2]	Experimental Engineering d (Mech. Eng. XVIII).....	[2]
Bridge Details (Civ. Eng. VI).....	[2]	Bridge Design (Civ. Eng. VIII).....	[3]
Bridge Analysis (Civ. Eng. VII).....	2	Reinforced Concrete (Civ. Eng. X).....	2
Masonry Construction (Civ. Eng. IX)....	2 [1]	Water Supply (Civ. Eng. XII).....	3
Sewerage (Civ. Eng. XI).....	2	Tunneling (Civ. Eng. XIII).....	1
Assigned Work (Civ. Eng. XV).....	3	Contracts and Specifications (Civ. Eng. XIV).....	2
Drill (Mil. Sci. and T. I).....	[1]	Assigned Work (Civ. Eng. XV).....	3
		Drill (Mil. Sci. and T. I).....	[1]

## CHEMICAL ENGINEERING.

## Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I)....	1	Debating (Oral Expr. II).....	1
Qualitative Analysis (Chem. III).....	[3]	General Physics (Physics II).....	[1½]
General Physics (Physics II).....	4	Laboratory Physics (Physics III).....	4
Laboratory (Physics III).....	[1½]	Calculus, completed (Math. XI).....	5
Analytics, completed (Math. IX), Cal- culus (Math. X).....	5	Graphic Statics (Mech. Eng. IV).....	2
Descriptive Geometry (Mech. Eng. V)..	1 [2]	Organic Chemistry (Chem. IV).....	3 [1]
German (Ger. II).....	3	Quantitative Analysis (Chem. VII)....	[3]
Drill (Mil. Sci. and T. I).....	[1]	German (Ger. II).....	3
		Drill (Mil. Sci. and T. I).....	[1]

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Principles of Criticism (English IV)....	4	Debating (Oral Expr. III).....	1
Debating (Oral Expr. III).....	1	Industrial History (History I).....	4
Steam Engineering (Mech. Eng. IX)....	3	Steam Engineering (Mech. Eng. IX)....	1½
Applied Mechanics (Mech. Eng. X).....	5	Organic Chemistry (Chem. VI).....	[3]
Quantitative Analysis (Chem. VIII)....	[3]	Quantitative Analysis (Chem. VIII)....	[4½]
Physical Chemistry (Chem. XII).....	3 [1]	Determinative Mineralogy (Chem. XI)..	[1½]
Reports and Discussions (Chem. XXI)..	1	Industrial Chemistry (Chem. XVI).....	4
Drill (Mil. Sci. and T. I).....	[1]	Reports and Discussion (Chem. XXI)..	1
		Drill (Mil. Sci. and T. I).....	[1]

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II), Oratory (Oral Expr. IV).....	5	Civil Government (History II), Princi- ples of Criticism—The Drama (Eng- lish V), Oratory (Oral Expr. IV)....	5
Mechanism (Mech. Eng. XII).....	3	Metallurgy (Chem. XIII).....	2
Experimental Engineering a (Mech. Eng. XV).....	[2]	Industrial Chemistry (Chem. XVII)....	[3]
Theory of Direct Currents (El. Eng. I)..	3	Assaying (Chem. XVIII).....	[2]
Organic Chemistry (Chem. V).....	3 [1]	Reports and Discussions (Chem. XXI)..	1
Reports and Discussions (Chem. XXI)..	1	Assigned Work (Chem. XX).....	3
Assigned Work (Chem. XX).....	3	Electro-Chemistry (Chem. XXII)....	3
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## Teachers' Courses in Applied Science.

This course is intended to prepare persons to teach in industrial schools those branches of applied science that pertain especially to agriculture and the mechanic arts. In such schools it has been found of especial importance that the teachers be trained in an environment of current thought, sympathetic with the industrial applications of science and intelligently appreciative of the methods and problems of such work. In response, therefore, to the need, and in accordance with an expressed purpose of the new fund from the United States Government, we have constructed this course. The effort has been to make the course effective for its purpose, while at the same time retaining for it that breadth and that cultural

influence that are necessary to fit the whole man or woman for social life and are especially important in persons who, as teachers, will exercise large personal influence over immature youth.

The general plan of the course is the same as that of the other two courses just described. It opens to the student, at the beginning of the Junior year, three options, one of which he must select in conjunction with certain studies required of all. The tabulated course follows:

### Freshman Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I)...	3	Rhetoric and Composition (English I).....	3
German or French (I or II).....	3	German or French (I or II).....	3
Algebra (Math. I), Trigonometry (Math. II).....	5	General Chemistry and Qualitative Analysis (Chem. II).....	3 [1½]
General Chemistry (Chem. I).....	2 [1½]	General Botany (Botany I).....	1 [2]
General Botany (Botany I).....	1 [2]	Trigonometry, completed (Math. VII), Analytics (Math. VIII).....	5
Propagation of Plants (Hort. I).....	1 [1]	Drawing, Pencil (Fr. Dr. II).....	[1]
Drawings, Pencil (Fr. Dr. II).....	[1]	Drill (Mil. Sci. and T. I), and Theory (Mil. Sci. and T. II).....	1 [1]
Drill (Mil. Sci. and T. I), and Theory (Mil. Sci. and T. II).....	1 [1]	Euthenics (Home Econ. III b) and sical Training.....	1 [1]
Hygiene (Home Econ. III a) and Phy- sical Training.....	1 [1]		

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I)....	1	Debating (Oral Expr. II).....	1
German or French (II).....	3	German or French (II).....	3
Qualitative Analysis (Chem. III).....	[3]	Organic Chemistry (Chem. IV).....	3 [1]
Economic Botany (Botany II).....	1 [2]	Physiology (Zoöl. III).....	3 [1]
General Zoölogy (Zoöl. I).....	2 [2]	Geology (I).....	[2]
General Physics (Physics II).....	4	General Physics (Physics II).....	4
Laboratory (Physics III).....	[1½]	Laboratory (Physics III).....	[1½]
Drill (Mil. Sci. and T. I) or Physical Training.....	[1]	Drill (Mil. Sci. and T. I) or Physical Training.....	[1]

### Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Principles of Criticism (English IV) ...	4	Debating (Oral Expr. III).....	1
Debating (Oral Expr. III).....	1	Industrial History (History I).....	4
Psychology (Psy. and Ed. IV).....	3	Drill (Mil. Sci. and T. I) or Physical Training.....	[1]
Drill (Mil. Sci. and T. I) or Physical Training.....	[1]	Elective.....	5
Elective.....	5	Options: A, B, C. All of the subjects in one of the fol- lowing groups must be chosen:	
Options: A, B, C. All of the subjects in one of the fol- lowing groups must be chosen:		A. Agriculture. Farm Crops (Agron. IV).....	3 [1]
A. Agriculture. Soils (Agron. III).....	4 [1½]	Economic Entomology (Zoöl. IV).....	3 [1]
Veg. Gardening (Hort. II) or Fruit Culture (Hort. III).....	2	Forestry (Botany IV).....	2
B. Biology. Vertebrate Anatomy (Zoöl. VII).....	1 [2]	Histology and Embryology (Zoöl. VIII). 2 [3]	
Plant Histology (Botany V).....	1 [4]	Plant Pathology (Botany VI).....	1 [4]
C. Chemistry. Quantitative Analysis (Chem. VIII)....	[3]	C. Chemistry. Organic Chemistry (Chem. VI).....	[3]
Organic Chemistry (Chem. V).....	3 [1]	Quantitative Analysis (Chem. VIII)....	[4½]
Reports and Discussions (Chem. XXI)..<	1	Mineralogy (Chem. XI).....	[1½]
		Reports and Discussions (Chem. XXI)..<	1

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II), Oratory (Oral Expression IV).....	5	Civil Government (History II), Principles of Criticism—The Drama (English V), Oratory (Oral Expression IV).....	5
History of Education (Psy. and Ed. I).....	3	Secondary Education (Psy. and Ed. III).....	2
Principles of Education (Psy. and Ed. II).....	2	Assigned Work.....	3
Assigned Work.....	3	Drill (Mil. Sci. and T. I) or Physical Training.....	[1]
Drill (Mil. Sci. and T. I) or Physical Training.....	[1]	Options: A, B, C.	
Options: A, B, C.		All of the subjects in one of the following groups must be chosen:	
All of the subjects in one of the following groups must be chosen:		A. <i>Agriculture.</i>	
A. <i>Agriculture.</i>		Landscape Gardening (Hort. XIII)....	2 [1]
Poultry (An. Husb. XII).....	[1]	Floriculture (Hort. VI).....	1 [1]
Landscape Gardening (Hort. XIII)....	2 [1]	Farm Buildings (An. Husb. XI).....	[1]
Feeding (An. Husb. VI).....	3	Breeding (An. Husb. IV).....	3
B. <i>Biology.</i>		B. <i>Biology.</i>	
Plant Breeding (Agron XI).....	3	General Zoölogy (Zoöl. II).....	1 [2]
Trees and Shrubs (Botany III).....	[1]	Entomology (Zoöl. V).....	2 [2]
Entomology (Zoöl. V).....	1 [2]	Trees and Shrubs (Botany III).....	[1]
C. <i>Chemistry.</i>		C. <i>Chemistry.</i>	
Physical Chemistry (Chem. XII).....	3 [1]	Electro-Chemistry (Chem. XXII).....	3
Reports and Discussions (Chem. XXI).....	1	Industrial Chemistry (Chem. XVI)....	4
		Industrial Chemistry (Chem. XVII)....	[3]
		Reports and Discussions (Chem. XXI).....	1

## The Course in Home Economics.

The object of the home economics course is to fit young women for homemaking and to provide adequate training for teachers of the various household arts. Nowhere is the application of modern science to everyday life more important than in the home. In no other lifework do women find greater need of scientific knowledge and technical skill than in the intelligent and economic administration of household affairs.

The course includes instruction in the planning, sanitation, decoration, and care of the house and its administration on the economic side; the preparation of food from the scientific and economic points of view; the study of nutrition; the discussion of problems of personal and public hygiene and instruction in the care of infants and young children. During one year instruction is given in hand sewing, machine practice, and in drafting, cutting, and making of plain garments. Although the main work is scientific and technical, the importance of artistic and literary training for home life has not been neglected. It is recognized that all the knowledge of right living is needed to assist the student to a broader conception of citizenship as well as in performing the manifold duties of daily life.

Attention has also been given, in planning the course, to the needs of students desiring to enter special fields of domestic activity along institutional and educational lines of work.



The entrance requirements are the same as for the other college courses. Of the one hundred and seventy credits required for graduation, thirty-seven are required in the home economics department. Students are expected to take the course as outlined below, with choice of electives; but when entered in other courses in the college they may elect certain work in the home economics department, under direction of the head of the department. The tabulated course follows:

### Freshman Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I)...	3	Rhetoric and Composition (English I)...	3
German or French (I or II).....	3	German or French (I or II).....	3
Algebra (Math. I), Trigonometry (Math. II).....	5	General Chemistry and Qualitative Analysis (Chem. II).....	3 [1½]
General Chemistry (Chem. I).....	2 [1½]	General Botany (Botany I).....	1 [2]
General Botany (Botany I).....	1 [2]	Drawing, Pencil (Fr. Dr. II).....	1 [1]
Drawing, Pencil (Fr. Dr. II).....	1 [1]	Physical Training.....	1 [2]
Physical Training.....	1 [1]	Domestic Art (H. Ec. I).....	1 [1]
Domestic Art (H. Ec. I).....	1 [1]	Elementary Cookery (H. Ec. II).....	1 [1]
Hygiene (H. Ec. IIIa).....	1	Euthenics (H. Ec. IIIb).....	1

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I)...	1	Debating (Oral Expr. II).....	1
German or French (II).....	3	German or French (II).....	3
Qualitative Analysis (Chem. III).....	[3]	Organic Chemistry (Chem. IV).....	3 [1]
General Zoölogy (Zoöl. I).....	2 [2]	Physiology (Zoöl. III).....	3 [1]
Color problems (Fr. Dr. IV).....	1 [1]	Descriptive Physics (Physics I).....	5
Physical Training.....	1 [1]	Physical Training.....	1 [1]
Foods (H. Ec. IV).....	3 [1½]	Foods (H. Ec. IV).....	2 [1½]
Household Management (H. Ec. V)....	2		

### Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Principles of Criticism (English IV)....	4	Debating (Oral Expr. III).....	1
Debating (Oral Expr. III).....	1	Industrial History (History I).....	4
Psychology (Psy. and Ed. IV).....	3	Physical Training.....	[1]
Physical Training.....	[1]	Physiological Chemistry (Chem. XIX)...	4
Vertebrate Anatomy (Zoöl. VII).....	1 [2]	Histology and Embryology (Zoöl. VIII)...	2 [3]
Mechanical Drawing (Mech. Eng. II)....	[1½]	History of Art (Fr. Dr. III).....	2
Human Nutrition (H. Ec. VI).....	3	Freehand Drawing (VIII).....	[1]
Home Decoration (H. Ec. VII).....	2	Dietetics (H. Ec. VIII).....	1 [1]
Elective.....	4	Sanitation (H. Ec. IX).....	2
		Elective.....	3

### Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II), Oratory (Oral Expr. IV).....	5	Civil Government (History II), Principles of Criticism—The Drama (English V), Oratory (Oral Expr. IV).....	5
Physical Training.....	[1]	Sociology (Psy. and Ed. VII).....	3
Food Analysis (Chem. X).....	[4]	Physical Training.....	[1]
History of Education (Psy. and Ed. I)...	3	Assigned Work (H. Ec. XIV).....	3 [2]
History of Art (Fr. Dr. III).....	2	Home Nursing (H. Ec. XII).....	2
Food Preservation (H. Ec. X).....	1	Therapeutic Cookery (H. Ec. XIII)....	1 [1]
Hygiene and Care of Children (H. Ec. XI).....	2	Elective.....	3
Elective.....	3		



## II. SHORT COURSES IN AGRICULTURE, IN MECHANIC ARTS, AND IN DOMESTIC SCIENCE.

To meet the needs of those who find it inexpedient to undertake a four-years' college course, but who, nevertheless, desire to increase their efficiency on the farm, in the home or in industrial pursuits, the college offers what are known as short courses in agriculture, in mechanic arts, and in domestic science.

At present each of these courses is of two years' duration. The only requirements for admission are that candidates shall be at least eighteen years of age and shall have completed the common school course. The courses are in no case supposed to serve as a substitute for the regular work of the college, in character or scope of the subject-matter presented, and do not lead, directly or indirectly, to a degree, a certificate only being granted. Neither are they to be considered as preparatory to the college work. Their particular function is to give, in the shortest, most direct way possible, certain definite, specific, and perhaps uncorrelated information which will be of immediate value on the farm, in the shop, or in the home.

In studies of common interest, like mathematics and English, all short-course students work together. All other instruction is of a special nature and is given in the respective departments of agriculture, mechanical engineering, and home economics. In mathematics work is begun in arithmetic, covers mensuration, gives an elementary treatment of bookkeeping, and proceeds with work of a more advanced character as far as the capabilities of the class will permit. The greatest stress is laid upon the analysis and solution of many practical problems from the farm, the factory, and from daily life. In English the object is to develop the power of clear analysis and expression by continued drill in grammar and composition, based upon readings in industrial or political history.

The special work in agriculture treats in an elementary way of such subjects as plant life, soils and fertilizers, vegetable gardening, stock judging, crops, dairy practice, poultry, fruit culture, etc. The course in domestic science gives practical instruction in the care of the house, foods, plant life, physical training, home management, etc. The engineering department offers work in the various forms of shop work, draughting, mechanical movements, and practical information in regard to the construction and operation of engines, boilers, and pumps.

Short-course work is of comparatively recent introduction at this institution, and consequently is still in the process of development. It is hoped to increase the effectiveness of each of the above phases of the work at as early a date as possible, by more completely separating them from one another and from other lines of instruction; also, particularly in agriculture and engineering, by a re-adjustment of the time in such a way as to accommodate a greater number of men desiring to take the course. For example, it is proposed to give the agricultural matter in three winter terms of twenty-four weeks each, rather than in two years of thirty-six weeks each, the idea being that the shorter period would enable a larger number of practical farmers to attend. In engineering the problem is somewhat different. Its proposed solution is as follows:—Demands for definite, special training, as for a dynamo tender or a stationary engineer, may be met by making the courses of instruction largely special or elective. In order that irregular periods of freedom from regular duties may be employed for study, and that each individual's progress may depend only on his own exertions and ability, it is proposed to conduct this department as an ungraded school. This plan should possess the attractions and possibilities of the usual correspondence courses, and be far superior to them in the opportunities for personal instruction and laboratory practice. According to this arrangement, a student might enter at any time and take any one or group of the following subjects: English grammar, and composition based on the technical work; arithmetic and mensuration; mechanical drawing; forge shop; pattern making; machine shop; mechanical movements; elementary discussion of power-plant machinery; elementary electricity; electrical wiring. The tabulated courses follow:

## Agriculture.

### First Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (A).....	5	Elementary English (A).....	5
Plant Life (Botany A).....	1 [2]	Plant Life (Botany A).....	1 [2]
Elementary Zoölogy (A).....	3 [1½]	Soils, Fertilizers (Agron. A).....	4 [1]
Breeds (An. Husb. A).....	2	Plant and Animal (Chem. A).....	3 [1]
Stock Judging (An. Husb. B).....	[2]	Nursery Practice (Hort. C).....	1 [1]
Plant and Animal (Chem. A).....	3 [1]	Benchwork (Woodwork I).....	[1½]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## Second Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Bookkeeping (Math. G).....	4	Vegetable Gardening (Hort. A).....	2 [1]
Crops and Rotation (Agron. B).....	3 [1]	Farm Management (Agron. C).....	4
Dairy Practice (An. Husb. C).....	1 [2]	Breeding (An. Husb. E).....	2 [1]
Stock Feeding (An. Husb. D).....	3	Poultry (An. Husb. F).....	1 [1]
Fruit Culture (Hort. B).....	3	Farm Buildings (Wood work H).....	2
Poultry (An. Husb. F).....	1 [1]	Farm Machinery (Agron. D).....	1 [2]
Care of Farm Animals (An. Husb. G)....	2	Spraying and Pruning (Hort. E).....	1 [1]
Drill (Mil. Sci. and T. I.).....	[1]	Home Grounds (Hort. F).....	[1]
		Drill (Mil. Sci. and T. I.).....	[1]

## Mechanic Arts.

## First Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (A).....	5	Elementary English (A).....	5
Arithmetic (Math. F).....	5	Arithmetic (Math. F).....	5
Mechanical Drawing (Mech. Eng. I)....	[3]	Mechanical Drawing (Mech. Eng. I)....	[3]
Forge and Foundry (Mech. Eng. II)....	[3]	Pattern Making (Mech. Eng. III).....	[3]
Machine Shop (Mech. Eng. VII).....	[3]	Machine Shop (Mech. Eng. VII).....	[3]
Mechanical Movements (Mech. Eng. D).	3	Mechanical Movements (Mech. Eng. D).	3
Drill (Mil. Sci. and T. I.).....	[1]	Drill (Mil. Sci. and T. I.).....	[1]

## Second Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (B).....	3	Elementary English (B).....	3
Bookkeeping (Math. G).....	4	Algebra (Math. H).....	5
Mechanical Drawing (Mech. Eng. VI)..<	[3]	Mechanical Drawing (Mech. Eng. VI)..<	[3]
Machine Shop (Mech. Eng. XIV).....	[3]	Machine Shop (Mech. Eng. XIV).....	[3]
Engineering Theory (Mech. Eng. E)....	5	Engineering Theory (Mech. Eng. E)....	5
Elementary Physics (A).....	3	Elementary Physics (A).....	3
Drill (Mil. Sci. and T. I.).....	[1]	Drill (Mil. Sci. and T. I.).....	[1]

## Domestic Science.

## First Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (A).....	5	Elementary English (A).....	5
Arithmetic (Math. F).....	5	Arithmetic (Math. F).....	5
Plant Life (Botany A).....	1 [2]	Plant Life (Botany A).....	1 [2]
Elementary Zoölogy (A).....	2 [2½]	Floriculture.....	2
Household Technique (Dom. Sci. A)....	[1]	Foods (Dom. Sci. C).....	3 [1½]
Sewing (Dom. Sci. B).....	[1]	Physical Training.....	[1]
Physical Training.....	[1]		

## Second Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (B).....	3	Elementary English (B).....	3
Bookkeeping (Math. G).....	4	Algebra (Math. H).....	5
Plant and Animal (Chem. A).....	3 [1]	Plant and Animal (Chem. A).....	3 [1]
English History (History A).....	3	English History (History A).....	3
Dietetics (Dom. Sci. D).....	3 [1]	Management of House (Dom. Sci. E)...	1
Physical Training.....	[1]	Hygiene (Dom. Sci. F).....	1
		Textiles (Dom. Sci. G).....	[1½]
		Physical Training.....	[1]

### III. SPECIAL POULTRY COURSE.

For many years this college has offered a winter course in the poultry industry. In fact, the first poultry course to be offered in the United States was offered here thirteen years ago. The college will continue to offer a course during the winter term.

#### Requirements for Admission to the Degree Courses.

##### UNITS.

The requirements for admission are reckoned in units. A "unit" represents the successful completion of a year's study of a subject, to which have been devoted not less than one hundred and twenty recitation periods of sixty minutes each, or their equivalent (*e. g.*, one hundred and eighty periods of forty minutes each). For the year 1911-12, fourteen units will be required. A student may obtain this amount of entrance credit from high-school work or from examination.

##### GROUPS.

The entrance subjects are divided into two groups, A. and B. Those in A, with one exception—solid geometry—are required of all candidates for admission.

##### GROUP A.

The school year is reckoned at thirty-six weeks, the minimum length.

English.....	108 weeks.....	3 units.
German or French.....	36 weeks.....	1 unit.
Algebra.....	54 weeks.....	1½ units.
Geometry, Plane.....	36 weeks.....	1 unit.
Geometry, Solid—for engineering students only, 18 weeks.....		½ unit.
Physics.....	36 weeks.....	1 unit.
History.....	36 weeks.....	1 unit.

The remainder of the fourteen units must be taken from

##### GROUP B.\*

No subject is accepted for more than the amount here stated or for less than two-fifths of a unit.

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\* Other subjects not here named will receive due consideration if presented on the application blank, with a statement of the work done.



Foreign Language.....	216 weeks.....	6 units.
Geometry, Solid—for other than engineering students, 18 weeks.....		$\frac{1}{2}$ unit.
Botany.....	36 weeks.....	1 unit.
Chemistry.....	36 weeks.....	1 unit.
Geology.....	18 weeks.....	$\frac{1}{2}$ unit.
Physiography.....	36 weeks.....	1 unit.
Physiology.....	18 weeks.....	$\frac{1}{2}$ unit.
Zoölogy.....	36 weeks.....	1 unit.
History.....	36 weeks.....	1 unit.
Drawing.....	36 weeks.....	1 unit.
Domestic Science.....	18 weeks.....	$\frac{1}{2}$ unit.
Shop Practice.....	18 weeks.....	$\frac{1}{2}$ unit.
Farm Practice.....	18 weeks.....	$\frac{1}{2}$ unit.

### METHODS OF ADMISSION.

On any or all of the subjects named in both groups, satisfactory standings from any reputable high school will be accepted in lieu of examination, on presentation of a copy of the student's full record in the high school, showing clearly the nature of the work pursued in each subject, time devoted to it, and grade of work done. This copy must be duly signed by the proper official of the school, and must be accompanied by a certificate of good moral characer. The latter, however, may be from any reputable source. On application, blanks showing definitely the full nature of the information desired from the high school will be furnished.

Candidates not presenting satisfactory standings from reputable high schools will be examined, over ground corresponding to the number of points attached on all the subjects of Group A and on such of Group B as they may offer. Examinations for entrance will be held at the close of the college year in June, and also at the opening in September, as announced in the calendar, page 11.

### SPECIFICATIONS OF GROUND TO BE COVERED.\*

#### GROUP A.

These subjects, with the exception stated, are required of all students to the extent indicated by the number of units designated in each case.

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\* For any or all of the subjects described below the requirements of the College Entrance Examination Board, upon which these specifications are largely based, will be accepted. A circular stating these requirements in detail and blank forms of application for examination may be obtained by sending ten cents in stamps to the College Entrance Examination Board, Post Office Sub-Station 84, New York City.



## Languages.

ENGLISH, 3 UNITS.—In English two aims are sought: first, a knowledge of the language—including the acquisition of an ample vocabulary and power of effective expression—second, some acquaintance with the literature. To attain the first, grammar and composition must be thoroughly studied. Throughout the secondary-school course there should be much practice in writing along a variety of lines suggested by the pupil's experience, his general interests, and studies other than English. Spelling, punctuation, accuracy of idiom, should receive due attention in all written work; while correct and forceful oral expression should also be insisted upon.

To meet the requirement in literature certain selections are to be made from two lists of works—one for reading, the other for closer study. It is hoped to foster in this way a taste for good books and an intelligent appreciation of them. Committing to memory selected passages and reading aloud are strongly urged. In all cases some knowledge of the author's life and his place in literature should be acquired, while a more exacting study of selected texts would lay emphasis on form and style, meaning of particular words and phrases, and the significance of allusions. The list of books prescribed for 1911-12 will be sent on application, or may be obtained from the nearest high-school principal.

GERMAN, 1 UNIT.—During the first year the work should consist of drill in pronunciation, the rudiments of grammar, writing from dictation, simple composition and conversation, and the reading of from 100 to 175 pages of easy prose and poetry.

FRENCH, 1 UNIT.—The course in French should parallel that in German. During the first year there should be drill in pronunciation, the rudiments of grammar, writing from dictation, simple composition and conversation, and the reading of from 100 to 175 pages of easy prose and poetry.

## Mathematics.

ALGEBRA,  $1\frac{1}{2}$  UNITS.—The requirement in algebra comprises the four fundamental operations; factoring, highest common factor and lowest common multiple; fractions; linear equations; exponents; radicals; quadratic equations; simultaneous equations involving quadratics; binomial theorem for positive integral exponents. Problems should be given at frequent intervals in the work.

PLANE GEOMETRY, 1 UNIT.—This requirement is met by the usual theorems and constructions of standard text-books, numerous originals, and applications.

SOLID GEOMETRY,  $\frac{1}{2}$  UNIT.—The ground is covered by the usual theorems and constructions of standard text-books, originals, and applications.

## Science.

PHYSICS, 1 UNIT.—This course should consist of classroom work based on a standard text-book, accompanied by lecture-table demonstrations and by numerous practical problems. A parallel course in individual laboratory work is desirable, but is not absolutely required. In the case of laboratory work, one hour of credit will be allowed for each two hours spent in the laboratory.

## History, 1 unit.

The requirement in history will be met by presenting any one of the following subjects: ancient history, especially Greek and Roman, with the chief events of the early Middle Ages to the death of Charlemagne (814); medieval and modern European history from 814 to the present time; English history; American history and civil government.

## GROUP B.

From this group units are to be taken, in addition to those of Group A, sufficient to make up the whole number required. Any combination of units, including fractions not less than two-fifths, will be allowed.

## Languages.

GERMAN, 2 OR 3 UNITS.—The requirement for one unit is indicated under Group A. One unit will also be allowed for second and each for third and fourth year work. During the second year the course should be a continuation of the first as regards grammar, composition, and conversation. The reading should consist of at least 200 pages of such texts as Arnold's *Fritz auf Ferien*, Wildenbruch's *Das Edle Blut*, Mosher's *Willkommen in Deutschland* and Benedix' *Der Prozess*. Third-year study should emphasize reading and advanced composition. Suitable texts are Riehl's *Der Fluch der Schönheit*, Freytag's *Bilder aus der deutschen Vergangenheit*, Lessing's *Minna von Barnhelm*, Schiller's *Wilhelm Tell*, and Heine's *Die Harzreise*. The fourth-year's work should mark a decided advance in the mastery of vocabulary and idiom as shown both in speaking and writing. The works read may be made the basis for themes. The following reading matter is suggested: Freytag's *Soll und Haben*, Fulda's *Der Talisman*, Hauff's *Lichtenstein*, Scheffel's *Ekkehard*, Schiller's *Wallenstein*, *Maria Stuart*, or *Geschichte des dreissigjährigen Krieges* (Book III), Dahn's *Ein Kampf um Rom*, Goethe's *Dichtung und Wahrheit* (Books I-IV).

FRENCH, 2 OR 3 UNITS.—The requirement for one unit is indicated under Group A. One unit will also be allowed for second and one each for third and fourth year work. Throughout the second year the course should be a continuation of the first as regards grammar, composition and conversation. At least 250 pages of such texts as Bruno's *Le Tour de la France*, Malot's *Sans Famille*, Mérimée's *Colomba*, and Sarcey's *Le Siège de Paris* should be read. In the third year emphasis should be laid on reading. Some time ought also to be given to advanced composition. Among suitable texts may be mentioned Racine's *Athalie*, Corneille's *Le Cid*, Molière's *Le Bourgeois Gentilhomme*, Sandeau's *Mademoiselle de la Seiglière*, Vigny's *La Canne de Jonc*, Hugo's *La Chute*. From the fourth-year's study increased facility in conversation and composition should be gained, and any modern French, other than technical, should be read with ease. Such texts as the following are recommended: the prose works of Dumas père, Hugo's *Ruy Blas*, La Fontaine's *Fables*, Sainte-Beuve's *Essays*, Taine's *Origines de la France Contemporaine*, Pellissier's *Mouvement Littéraire au XIXe Siècle*. At least 600 pages should be read.

**LATIN, 1 TO 4 UNITS.**—A credit of one unit will be given for each year's work in Latin, covering in all a standard beginners' book, four books of Cæsar's Gallic War, six orations of Cicero and six books of Virgil's *Æneid*. It is expected that work in prose composition and sight reading will be included in each subject.

## Mathematics.

**SOLID GEOMETRY,  $\frac{1}{2}$  UNIT.**—See Group A. For other than engineering students.

## Science.

**BOTANY, 1 UNIT.**—The preparation in botany should include individual laboratory work recorded by notes and diagrammatic drawings. Field work is desirable, and should also be accompanied by notes. The notebook and drawings certified by the teacher should be presented at the time of application for entrance credit. The year's course of study should consist of three parts, viz.: 1. The general principles of the anatomy, morphology, physiology, and ecology of seed plants. 2. The natural history of the plant groups. The structure, reproduction, and adaptations to habitat of one or two types from each group should be studied. 3. Classification. A brief study of the subdivisions of the above groups. Ability to determine species of flowering plants is not essential. Any standard textbook covering the above field may be used.

**CHEMISTRY, 1 UNIT.**—An elementary text-book, such as Williams's *Elements of Chemistry* by Brownlee and Others, should be covered by recitations. At least one exercise per week must be devoted to individual work in the laboratory. The pupil must perform forty or more experiments, such as are described in the Report of the College Entrance Examination Board, 1909, and keep a notebook in which he describes the apparatus used, records the phenomena observed, and states the conclusions in his own words, in each experiment.

**GEOLOGY,  $\frac{1}{2}$  UNIT.**—In geology a study of the following subjects should be made: rock-forming minerals, their names and chemical constituents; earthquakes—their cause and effects; volcanoes—distribution, types, character of eruption, nature of erupted material; supposed physical state of the earth's interior; surface agencies destructive to rocks, with brief illustrations; processes of reconstruction with illustrations; rocks—classification, according to origin, rock fracture and dislocation, rock structure due to erosion, metamorphic rocks, mineral veins and their method of formation; conditions determining land sculpture; the geological periods, with land elevations, and the characteristics of climate, plant and animal life of each period.

**PHYSIOGRAPHY, 1 UNIT.**—This course should include a consideration of the earth as a globe, the atmosphere, the waters of the earth, the lands, life upon the earth, and the reactions between these elements. Special attention should be given to the questions of climate, the winds, the weather, tides, ocean currents, and to the effect of the ocean in modifying climatic conditions. Attention should be directed to the manner in which the land was originally formed and to the way in which the original formation has been and is being modified by the action of erosion, the winds, and frost. Throughout the course consideration should be given to the

manner in which the various physical characteristics of the earth have affected life upon its surface.

**PHYSIOLOGY,  $\frac{1}{2}$  UNIT.**—The text-book work should cover material equivalent to that of Martin's Human Body or Hough and Sedgwick's Human Mechanism. In addition the applicant should present a notebook, showing laboratory work upon the elementary physiological processes and general structure of mammals.

**Zoölogy, 1 UNIT.**—The work should include: 1. The general natural history of a number of common vertebrates and invertebrates common to the locality where the work is given. 2. The classification of these forms into phylum, class and order, with the characteristics of the several groups. 3. The main anatomical features of one vertebrate, two arthropods (one an insect); an annelid, preferably the earthworm, a coelenterate, two protozoans (*Amœba* and *Paramœcium* recommended). 4. The general physiology of the above types involving digestion, absorption, circulation, excretion, and nerve function. These should be compared with the same functions in the human body. 5. The following subjects should be brought before the student in connection with the foregoing studies: asexual and sexual reproduction, alternation of generations, regeneration, fertilization, and segmentation of egg cells; adaptation; variations, evidences of relationship between similar groups, the cell structure of animals.

Certified notebooks must be presented, which include notes upon work and discussion in classroom and drawings of the forms dissected.

### History, 1 unit.

See Group A.

### Drawing, 1 unit.

This may be either freehand or mechanical. If freehand drawing is offered, the candidate should submit at least fifteen drawings, the majority to be in pencil, certified as his work by the instructor. These should show ability to sketch from various objects with considerable accuracy of proportion and clearness of line, and a fair understanding of the rules of perspective and light and shade as applied in freehand sketching. A candidate may also present the equivalent of five hours per week for one year in elementary mechanical drawing, lettering or sketching from models.

### Domestic Science, 1-2 unit.

In domestic science the student must present satisfactory evidence of knowledge in the following subjects: the use and care of the kitchen equipment, general cleaning processes, the marketable forms of staple foods. She must also show credit for at least twelve cooking laboratory lessons of two hours each.

### Shop Practice, 1-2 unit.

The candidate may offer carpentry or any of the various forms of bench-work given in a well-equipped manual training school, equivalent to five hours per week for one-half year.



### Farm Practice, 1-2 unit.

By "farm practice" is meant familiarity with the operations of the farm, such as the harnessing of teams, the use of tillage implements, and the care of dairy animals.

### Degrees.

The degree of Bachelor of Science is conferred upon a student who has completed one of the four-year courses outlined on pages 18-27. The degree of Master of Science is conferred upon those holding a Bachelor's degree from this institution, in regular order, or from other institutions having equal requirements, upon the completion of one year of resident study, the presentation of a satisfactory thesis in applied or economic science, and upon passing examinations in the subjects pursued. Candidates not graduates of this college must file with the committee on graduate study, not later than October first, a detailed statement of their previous work, certified by the proper authorities. They must select, not later than November fifteenth, a major and a minor subject which must be closely related and have the approval of the committee on graduate study and of the professor in whose department the principal work is done. Major subjects may be selected in any of the following departments: agriculture; botany; chemistry; zoölogy; home economics; electrical, mechanical, and civil engineering. The minor may be selected from undergraduate subjects outlined in the catalogue; the major, however, must be advanced work specially arranged with the individual professor. The thesis must be typewritten, upon paper of the size and quality prescribed, and two copies must be in the hands of the president not later than June first.

The requirement for the degree of Mechanical Engineer, Electrical Engineer, or Civil Engineer, consists of three years of successful professional practice subsequent to the Bachelor's degree, one of which must have been in a responsible position; the presentation of an acceptable thesis; and the passing of examinations upon the investigations involved in the thesis.

A registration fee of five dollars is charged for an advanced degree. Students from outside the state pay a tuition fee of thirty dollars during the year of residence. The cost of a diploma is five dollars.



## Teachers' Certificates.

The following resolution adopted by the Board of Education of this state is self-explanatory: "The certification of the president (of this college) that an applicant for a teacher's certificate has pursued a secondary school course of four years, subject to the approval of the committee on qualifications, and in addition thereto has pursued a four years' collegiate course in the Rhode Island College will be received as evidence of the required qualifications in scholastic subjects for a teacher's certificate of the first grade."

By action of the Regents of the State of New York, taken June 9, 1910, the degrees of B. S. and M. S. from this college are accepted as a basis for the issuance of licenses to teach in that state.

## Opportunities Offered to Women.

The course in home economics is especially designed for women, although all other courses are open to them. Special waiting and study rooms are provided for the women who are day students. For statements of accommodations for boarding students, see page 39.

## Expenses.

Tuition is free to residents of Rhode Island. To non-residents of the state, tuition is \$15.00 a term or \$30.00 a year.

The regular college expenses are tabulated as follows:

Board, \$3.75 per week.....	\$135 00
Room-rent, including heat and light.....	30 00
Incidental fee, \$4.50 per term.....	9 00
Laboratory deposit, \$5 per term.....	10 00
Uniform for military drill, estimated.....	16 00
	<hr/>
	\$200 00

The first four items must be paid quarterly in advance; that is to say, \$46.00 will be required at the opening of the year, September 20, 1911, and also at each of the following dates: November 27, 1911, February 14, 1912, and April 17, 1912. Non-residents of the state should add to this sum \$7.50 for tuition each quarter. In order to secure dormitory accommodations, the student is required to deposit one dollar with the application, the dollar to be credited on the fall-term room-rent. If the student fails to take the room, the dollar is forfeited. The uniform also must be paid for at the opening of the

college year, in advance. Against the laboratory deposit will be charged all material used in the various laboratories, and the destruction, breakage, or marring of apparatus and tools. If anything remains after such deductions have been made, the said remainder will be refunded. If, on the other hand, the charges shall at any time exceed the deposit, the student will be required to cover the excess by a further deposit.

Nothing has been said concerning books. The probable cost of these will be from \$15.00 to \$30.00 per year. For miscellaneous expenses connected with college life, students should add a sum varying from \$10.00 to \$25.00. A fee of 50 cents will be charged for each second examination to make up a condition. Graduates pay the cost of diplomas, \$5.00. *No diplomas will be issued until all term bills have been paid.* Room-rent and incidental deposit will not be refunded on withdrawal during the quarter. Students not taking any laboratory work will not be required to make a laboratory deposit. An athletic tax, levied by the students upon themselves, will be taken at the college office at the times set for college dues.

UNIFORM.—Every able-bodied male student is required to drill and to wear a uniform. The uniform must be paid for immediately on entering the college, when the students are measured for the suits. When worn only on drill and properly cared for, one uniform may last two or more years. The student may, however, wear his uniform all the time.

TRANSPORTATION.—The college conveys students daily to and from the railroad station free of charge. Once at the beginning and end of each term, a team conveys trunks to and from the station.

BOARDING STUDENTS.—The price of board for 1911-12 will be \$3.75 per week. Students who *leave regularly every week* on Friday afternoon and return Monday morning will receive a rebate for time of absence. No person will be admitted to the dining-room until he has secured from the bursar a meal ticket, on the back of which will be found the rules governing the holder of such ticket. After this ticket is issued, all charges for board will be made in accordance therewith, unless the student has the ticket changed by the bursar. Arrangement of charges for meals sent to students' rooms for any cause must be made in advance.

DORMITORIES FOR MEN.—East Hall is now in use, affording excellent accommodations for men students. The two upper floors

are entirely devoted to rooms for students. The sanitary conveniences on each floor are excellent and ample, including a full complement of shower baths. The first floor contains a large assembly hall, a handsome social room for the men, and a dining-room and kitchen fitted out with all modern equipment. South Hall is also devoted to the use of the young men and affords very desirable rooms for dormitory purposes.

**DORMITORY FOR WOMEN.**—During the summer of 1909 the interior of Davis Hall was entirely reconstructed. On the first floor are the administration offices. With the exception of the offices of the extension department on the second floor, the upper floors of the building are utilized for the women's department. The accommodations for women students in this building are under the direct supervision of a dean, and compare favorably with those at any women's college in the country. There is a neat hospital, with all necessary adjuncts. The oversight of the young women is efficient, kindly, and painstaking. Attention is especially invited to the new facilities and arrangements for the welfare of young women.

**FURNITURE.**—The rooms in the women's dormitory are provided with necessary furniture, including mattresses, but no other bedding material. *All students in the men's dormitory are required to supply their own furniture and bedding.* The necessary furniture may be obtained at the college when desired. A room may be furnished for from \$8.00 to \$10.00. Iron bedsteads three feet wide are included under room-rent. The furniture, if properly kept, may be sold, when the student leaves, for one-half to three-fourths the original price. All students should bring with them such articles as sheets, blankets, pillow, pillow-slips (all for single bed), and towels. Men students are required to purchase mattresses at the college.

**ROOMS IN THE VILLAGE.**—Arrangements have been made for rooms in the village of Kingston, some of these being under college management and others in private houses. In the case of the former, room rent will vary from 60 cents to \$1.00 per week, with heat and light furnished, the student to provide other furnishings. Furnished rooms in private houses for students who occupy them throughout the college year range from \$1.25 to \$2.00 per week.

**COLLEGE STORE.**—Students will be required to pay cash at the store for all books and other supplies.

DAMAGE FUND.—All damage not due to ordinary wear will be assessed to students as follows:

1. Students at once acknowledging damage and agreeing to pay for same will be assessed actual cost of repair, including labor.
2. Students found guilty of such damage but not acknowledging and settling for the damage will be charged double the cost of repair.
3. Students will be responsible for damage in their own rooms. Damage that is not settled as above may be assessed to all the students or to a group of students, pro rata. Each case and the amount of assessment will be considered on its merits.

### Employment at the College.

There is a certain amount of labor about the college buildings, on the farm, at the experiment station, and in the offices and laboratories, for which students will be employed whenever it is feasible to do so. Industrious students frequently earn an amount which aids considerably in paying their expenses,—a sum varying from \$25.00 to \$125.00 per year.

In view of the fact, however, that the amount of this work is strictly limited and that it is not the policy of the college to create such work, and, furthermore, because of the increasing number of students and the more frequent applications for student labor, it seems desirable to state the conditions under which this work will hereafter be assigned.

1. Application for work must be made on a blank which will be issued to the student on request. *Persons desiring such work must, if under age, bring a statement certifying to what extent the student must depend upon himself for support.* It must be borne in mind that the student can not make this certification for himself. Application for work, however, under no circumstances creates a claim on the college that work shall be assigned the applicant.

2. At a certain time before the opening of the fall term all applications for work will be considered and appointments will be made after due consideration of

- (a) Capability for the work.
- (b) Trustworthiness.
- (c) Good record as a student.
- (d) Need for financial aid.



[NOTE: Other things being equal, preference will be given to residents of the state, to upper-class students, and to those who room and board at the college.]

3. Such appointments are subject to revocation at any time, for

- (a) Incompetency.
- (b) Unfaithfulness in discharge of duty.
- (c) Misconduct or disloyalty to the institution.
- (d) Bad record in studies.

4. Such appointments must be recognized as

- (a) A mark of trust and responsibility.
- (b) A real and vital part of one's training for promptness, for initiative, and for leadership.
- (c) One of the very best criteria the teacher has in determining his estimate of the student's character, both for his own guidance and for recommendation to employers.

5. Payment for services will vary from ten to fifteen cents per hour, according to the grade and difficulty of the work and the experience of the student. In general, students should not expect more than ten cents an hour for the first year. It is a rule of the college that any student desiring to perform more than twenty hours of student labor per week must secure permission from the faculty council. In the future, it may be necessary to limit the amount which any one student may receive for student labor.

Some young people have the impression that the college offers such opportunities for self-help that it is safe to enter with practically no funds, relying solely on money earned while here. In exceptional cases this may be done, but prospective students are strongly advised not to enter until they have at least \$100.00 at their disposal. A student who has to make his own way must also plan to work steadily during both the short and long vacations. Occasional vacation work at the college can be furnished to students, but as a rule they should look elsewhere for this class of work.

### Religious Influences.

This college is a state institution, and consequently, the widest latitude is given to all creeds and forms of religious belief. Simple



chapel exercises are held, and are conducted by the president or some other member of the faculty. While in the main, attendance is not compulsory, it is desired and expected that all students will attend chapel. On one day of each week special exercises are held which all are required to attend.

A branch of the Intercollegiate Young Men's Christian Association is doing active work among the men students, holding a meeting every Sunday throughout the year. This association conducts courses in bible study, and is taking the lead in endeavoring to establish sound and high ideas of college life.

The Young Women's Christian Union is doing a similar work for the young women.

The village church cordially invites all students to attend its services and if possible, to join its membership. Every effort is made by the college to minister to the higher life of the students and to bring before them the noblest ideals, without in any way attempting to coerce them to particular beliefs.

## The College Lecture Association.

Faculty and students, uniting with residents of the vicinity, conduct a winter lecture course, the aim of which is to introduce talented speakers upon subjects both entertaining and instructive. The association may be looked upon as a permanent and important factor in college activities. For the season of 1910—1911 the following program was secured:

- Nov. 20. Frederick W. Bancroft, Song Recital.
- Dec. 16. Edward H. Frye, "The Man from Home."
- Jan. 26. Ex-Governor Hoch, "A Message from Kansas."
- Feb. 18. Frank Speaight, "Pickwick Papers."
- Mar. 17. Henry J. Kilbourn, "Italian Cities."
- April 14. Hayden Concert Company.

## Honors and Prizes.

### THE KINGSTON PRIZE.

For some years the sum of sixty dollars has been offered annually by a friend of the college to encourage literary work among the students. In 1910, this sum was divided equally among the departments of engineering, science, and agriculture, and two prizes, one

of fifteen and a second of five dollars, were awarded in each department for the best essays as follows:

## ENGINEERING:

Dorothy Walcott Caldwell, *first prize*; Richard Howes Wheeler, *second prize*.

## SCIENCE:

Rudolf Wilhelm Ruprecht, *first prize*; Allae Cordelia Slater, *second prize*.

## AGRICULTURE:

Patrick Joseph Healy, *first prize*; Clarence Bland Edwards, *second prize*.

## HONORS.

Honors awarded Commencement Day, June 9, 1910:

## SENIOR

Paul Steere Burgess.

## JUNIOR

Patrick Joseph Healy.

## SOPHOMORE

Henry Newell Barlow,  
Carle Muzzy Bigelow,  
Walter Doll,  
Allae Cordelia Slater.

## FRESHMAN

Ralph Irwin Alexander,  
Dorothy Dearborn Elkins,  
Marguerite White Elkins,  
Alice Edith Ford,  
Arthur Leslie Reynolds.

## FINAL HONORS

Paul Steere Burgess,  
Helen Scott Lamond,  
David Elbridge Worrall.

## The Library.

The library occupies a large room in Lippitt Hall, and numbers over seventeen thousand volumes. The books are arranged in stacks, to

## ERRATA.

PAGE 43. UNDER "HONORS."

For the word "Senior" in first line, read "Final Honors."

For the words "Final Honors" in last line, read "Senior Honors."

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## The Library.

The library occupies a large room in Lippitt Hall, and numbers over seventeen thousand volumes. The books are arranged in stacks, to which the students have free access. The Dewey system of classification is used; and a dictionary catalogue gives author, title, and subject entries. As the library has been from the first intended for reference work, the various departments of instruction have made their selections with the greatest care. Combined with the library is the reading-room, where one hundred and twenty of the leading periodicals—of literary, scientific, and general interest—are on file. From time to time these are bound, and prove of great value in reference work.

Since the library has been a government depository, twenty-five hundred books and pamphlets have been received, which are of value in scientific investigation and research.

The library is open every week day from 7:30 A. M. to 6:00 P. M., with the exception of an hour at noon. The librarian or her representative is in constant attendance, to aid any one in search of information. As the college is an institution designed to further the educational interests of Rhode Island, all residents of the state are at liberty to use its library.

### Location.

The college campus is one and one-half miles from Kingston station, which is at the junction of the main line of the N. Y., N. H. & H. R. R. with the Narragansett Pier branch, thus insuring excellent railroad accommodations. The buildings are on a hill which commands an extended view of the surrounding country—a location both healthful and beautiful. Sixteen trains stop daily at the station, so that the college is accessible from Providence or from New York City at almost any hour in the day. The ride from Providence is about forty to forty-five minutes in length. From New York the time is some four hours.



## Departments of Instruction.

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The following subjects are offered in the different departments. All subjects in the departments of instruction preceded by a Roman numeral count towards the degree of B. S. All subjects preceded by a capital letter lead to a certificate.

### Agriculture.

PROFESSOR ADAMS, PROFESSOR PUTNEY, ASSISTANT PROFESSOR COBB,  
MR. BURDICK, MR. MALLETT, MR. LAMBERT.

The instruction given in this subject is grouped under the three heads—agronomy, animal husbandry, and horticulture. The aim is to give such theoretical and practical training in the fundamentals of agriculture as will enable those who take this work to fill positions of trust and responsibility, either as owners of their own farms, managers of estates, or along other lines of agricultural activity.

That the graduates from this department may be fitted to take up the work outlined above, all students registered for a degree in agriculture will be required to show certain familiarity with the ordinary operations of the farm, before such degree is given.

In order that those students who have not had an opportunity to receive training in the practical work of the farm may become familiar with some of the more common operations, they will be required, during their connection with the college, to do a certain amount of routine farm work without pay. This will include work in the dairy barn, poultry yard, greenhouses and gardens. This training will be in addition to the laboratory credits prescribed in the regular course. The amount of such work required will depend upon the efficiency shown by the student. No college credits will be given for this work, yet the neglect of this phase of the training may be considered a sufficient cause for dismissal from the institution. Students may be required to spend one or two summers upon farms in order to get additional training. Persons taking practical work upon farms

during the summer vacations will be required to furnish a certificate from their employers, stating the time spent on the farm and the kind and amount of work accomplished. Special attention must be given to that branch of agriculture which the student is to elect during the Senior year.

## AGRONOMY.

PROFESSOR ADAMS, MR. BURDICK.

The instruction in agronomy begins the first term of the Sophomore year, when a study is made of the forage plants. Following this work are subjects dealing with the other field crops and their uses as food for man and beast. In the work with soils and fertilizers, especial emphasis is placed upon the problems connected with the proper use of chemical manures.

The business side of farm life is given attention in the subjects treating of farm equipment and management. Work with farm machinery is a laboratory course, in which the students are taught how to care for, repair, and operate modern farm machinery. In the Senior year there is instruction in plant breeding, a subject which is of the utmost importance to one who would make the most of the opportunities in crop production. Instruction in agricultural experimentation deals largely with the application of the results which have been obtained by the experiment stations, to the practical problems of the farm.

The equipment of the department includes the college farm and barns; also the farm machinery, consisting of a good line of tillage implements, fertilizer distributors, grain drill, and harvesting machinery. A well-equipped blacksmith shop is also provided.

Students have the advantage of the field experiments which are being conducted by the experiment station upon fertilizer problems and with various rotations.

### Subjects.<sup>1</sup>

II. Forage Crops.—History and development of the plants used for forage; silage, methods of construction of silos. *Two recitation credits per week, first term. Required of Sophomores in Agriculture.*

III. Soils and Fertilizers.—Origin and constituents of soils; texture, moisture, drainage, methods of tillage. Farm manures, artificial manures, composi-

tion and use; formulas for various crops. *Four recitation and one and one-half laboratory credits per week, first term. Required of Juniors in Agriculture. Option for Juniors in Applied Science. Prerequisite: Chemistry I and II.*

IV. Farm Crops.—Origin and history; production and place in the rotation of clovers, grasses, and root crops. *Three recitation credits and one laboratory credit per week, second term. Required of Juniors in Agriculture. Option for Juniors in Applied Science. Prerequisite: Botany I and II.*

VI. Farm Machinery.—Development of farm machinery, methods of construction, function, and operation. *Two recitation credits and one laboratory credit per week, second term. Required of Juniors in Agriculture. Mr. Burdick.*

VII. Farm Management.—Discussion of agricultural methods, choice of a farm, capital, marketing, types of farming, accounts. *Two recitation credits per week, second term. Required of Juniors in Agriculture. Prerequisite: Agronomy III and IV.*

VIII. Farm Management (advanced).—Individual problems of farm management are assigned. Abandoned farms will be visited and a critical study made of the existing conditions. *Two recitations credits per week, first term. Option for Seniors in Agriculture.*

IX. Literature.—History of agricultural and horticultural literature; a study of the different types of agricultural literature as illustrated by ancient and modern authors. Reports upon special topics. *Two recitation credits per week, second term. Option for Seniors in Agriculture.*

X. Agricultural Experimentation.—Objects, methods, and results of agricultural experimentation. A study of federal and state aid to agriculture as shown in the work of the United States Department of Agriculture and the Experiment Stations. *Three recitation credits per week, first term. Required of Seniors in Agriculture.*

XI. Plant Breeding.—A discussion of the development of plants under cultivation; with reference to heredity, environment, variation, and selection. *Three recitations credits per week, first term. Required of Seniors in Agriculture. Option for Seniors in Applied Science. Prerequisite: Botany I and II.*

A. Soils and Fertilizers.—An elementary course upon the origin and nature of soils. Fertilizers; natural and artificial manures; preparation and use; fertilizer arithmetic. *Four recitation credits and one laboratory credits per week, second term. Required of Short-Course students in Agriculture, first year.*

B. Crops and Rotations.—Methods of culture and uses of the grasses, clovers, cereals, and root crops. Rotation for the various types of farms. *Three recitation credits and one laboratory credit per week, first term. Required of Short-Course students in Agriculture, second year.*

C. Farm Management.—An elementary course upon the principles of farm management, equipment, cost of production. *Four recitation credits per week, second term. Required of Short-Course students in Agriculture, second year.*

D. Farm Machinery.—Care and repair of farm implements. *One recitation and two laboratory credits per week, second term. Required of Short-Course students in Agriculture, second year.* Mr. Burdick.

### ANIMAL HUSBANDRY.

PROFESSOR PUTNEY, MR. BURDICK, MR. LAMBERT.

Instruction in animal husbandry is so arranged as to furnish practical as well as theoretical instruction in the selection, care, and management of the live stock on the farm. Instruction commences in the second term of the Freshman year, with a study of the breeds, their care, and judging of types. These courses aim to provide a large amount of practical work in combination with the theoretical. In the Junior year attention is directed to dairying; and in the Senior year the work includes advanced judging, the management of pure-bred herds, flocks, and studs, and the scientific study of feeding farm live stock.

Instruction in poultry culture is given during the second term of the Freshman year, and is both theoretical and practical. In the Senior year an option is offered in advanced poultry judging. The equipment is particularly strong on the poultry side. The college poultry plant enables one to obtain a large amount of practical experience in incubation, brooding, and management. In addition to the poultry in the college yards, the students have opportunity to follow the investigations which are now being conducted by the experiment station. In addition to the subjects mentioned below, there is a six-weeks' course in poultry keeping during the winter months, full information concerning which may be obtained by addressing the president of the college.

### Subjects.

I. Stock Judging.—Scoring and comparison of various types of horses, cattle, sheep, and swine. Study of the special purpose or special type animal. *Two laboratory credits per week, second term. Required of Freshmen in Agriculture.* Professor Putney.

II. Advanced Judging.—Practice in judging and detail study of types. Herd testing methods. Tracing of pedigrees. *Two laboratory credits per week, first term. Option for Seniors in Agriculture.* Professor Putney.

III. Breeds.—History and character of the principal breeds of farm animals. Study of conditions to which each is adapted. *Two recitation credits per week, second term. Required of Freshmen in Agriculture.* Professor Putney.



IV. Principles of Breeding.—A study of the science and art of breeding. Discussion of the laws of heredity as applied to improvement of animal types. *Three recitation credits per week, second term. Required of Seniors in Agriculture. Option for Seniors in Applied Science. Prerequisite: Animal Husbandry III and Zoölogy III.* Professor Putney.

V. Management of Pure-Bred Herds, Flocks, and Studs.—Selection of foundation stock. Housing, feeding, and care. Advertising, fitting for sale and showing. *Two recitation credits per week, second term. Option for Seniors in Agriculture.* Professor Putney.

VI. Feeding Farm Animals.—Principles of animal nutrition. Feeding standards. Making up balanced rations. *Three recitation credits per week, first term. Required of Seniors in Agriculture. Option for Seniors in Applied Science. Prerequisite: Chemistry IV and XIV.* Professor Putney.

VII. Dairy Practice.—Lectures and laboratory practice in Babcock test and in handling milk and making butter on the farm. *One recitation and one and one-half laboratory credits per week, first term. Required of Juniors in Agriculture.* Mr. Burdick.

VIII. Dairy Practice.—Advanced work. Pasteurization. Starters. Testing for adulteration. Acidity. Moisture. *One recitation and two laboratory credits per week, second term. Option for Seniors in Agriculture.* Mr. Burdick.

IX. Research and Literature.—*Hours to be arranged, first term. Option for Seniors in Agriculture.* Professor Putney.

X. Veterinary Medicine.—Combating disease from the farmer's standpoint. Obstetrics. Injuries. *Three recitation credits per week, second term. Required of Seniors in Agriculture. Prerequisite: Zoölogy III.* Professor Putney.

XI. Farm Buildings.—Plans, location, and estimate on the various farm buildings. *Two laboratory credits per week, second term. Option for Juniors in Agriculture, and Seniors in Applied Science.*

XII. Poultry Craft.—A brief study of breeds, care, and management of all classes of fowls. *One laboratory credit per week, second term. Required of Freshmen in Agriculture. Option for Seniors in Applied Science.* Mr. Lambert.

XIII. Judging Poultry.—Practice in scoring and judging all classes of fowls. *Two laboratory credits per week, second term. Option for Seniors in Agriculture.* Mr. Lambert.

XIV. Poultry Husbandry.—Special subjects to be assigned. *At least two laboratory credits per week, throughout the year. Option for Seniors in Agriculture.* Mr. Lambert.

A. Breeds.—Breeds of horses, cattle, sheep, and swine. Emphasis is placed on the type best fitted to the agriculture of New England. *Two recitation credits per week, first term. Required of Short-Course students in Agriculture, first year.* Professor Putney.

B. Stock Judging.—Judging of the various classes of animals and their adaptability to different purposes, as cattle for milk or beef production, horses for



driving or draft. *Two laboratory credits per week, first term. Required of Short-Course students in Agriculture, first year.* Professor Putney.

C. Dairy Practice.—Babcock test for dairy products, production of sanitary milk, and butter making. *One recitation and two laboratory credits per week, first term. Required of Short-Course students in Agriculture, second year.* Mr. Burdick.

D. Stock Feeding.—Principles of nutrition. Compounding rations. *Three recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.* Professor Putney.

E. Principles of Breeding.—A study of the selection of animals, heredity, and variation. *Two recitation credits and one laboratory credit per week, second term. Required of Short-Course students in Agriculture, second year.* Professor Putney.

F. Poultry Breeds and Care.—A study and comparison of the different breeds of poultry, care of incubators and brooders, methods of feeding for the production of meat and eggs. *One recitation and one laboratory credit per week, throughout the year. Required of Short-Course students in Agriculture, second year.* Mr. Lambert.

G. Care of animals.—Housing, care, and management of farm animals. Practical directions for handling of stock on the farm. *Two recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.* Professor Putney.

## HORTICULTURE.

ASSISTANT PROFESSOR COBB.

The aim of the instruction in horticulture is to help the student to understand the practical and scientific problems which arise in the various lines of work included under this subject.

The headquarters of the department are in the horticultural building. The main building contains the office and recitation rooms, together with photographic rooms. Attached to this building are greenhouses of modern construction, containing over 8,000 square feet under glass, 3,000 square feet of which is used by the experiment station for fertilizer experiments. The remainder is devoted to college work, and thus affords an excellent opportunity to become familiar with the growth of plants under glass. The land devoted to the department comprises the college gardens; and the fruit orchards, containing over 150 varieties of fruit, which afford an excellent opportunity for the study of apples and pears especially. There is also a small vineyard. A collection of flowering shrubs

enables the student in landscape gardening to study, in the natural state, the material used in this work.

### Subjects.

I. Propagation of Plants.—Different methods, including seed testing. Soft, green, and hardwood cuttings. Layering, grafting, and budding. *One recitation and one laboratory credit per week, first term. Required of Freshmen in Agriculture and Applied Science.*

II. Vegetable Gardening.—Underlying principles and types of vegetable gardening; study of individual crops; text-book work. *Two recitation credits per week, first term. Required of Sophomores in Agriculture. Option for Juniors in Applied Science.*

III. Fruit Culture.—Fundamental principles of orcharding; soil, fertilizer, and cultivation. Methods of laying out orchards and planting. Tillage, pruning, and spraying. Harvesting and storing fruits. Collateral reading and practical work. *Two recitation credits per week, first term. Required of Juniors in Agriculture. Option for Juniors in Applied Science.*

IV. Spraying and Pruning.—Preparation and application of spray mixtures; insecticides and fungicides. Methods of application for different orchard enemies, and machinery used. Pruning of trees and ornamental shrubs. *One recitation and one laboratory credit per week, second term. Required of Freshmen in Agriculture. Option for Juniors in Applied Science.*

V. Greenhouse Construction and Management.—Study of the different types of glasshouse structures; methods of heating and ventilating. *One recitation and two laboratory credits per week, second term. Option for Seniors in Agriculture.*

VI. Floriculture.—History of floriculture. Study of greenhouse plants, collectively and individually; practical work in propagation, potting, watering, ventilating, fumigating, and spraying. Study of bulbs, bedding plants; palms and ferns. *One recitation and one laboratory credit per week, second term. Option for Seniors in Agriculture and Applied Science.*

VIII. Literature of Horticulture.—See Agronomy IX.

IX. Assigned Work.—Special subjects chosen by the student. *Option for Seniors in Agriculture. Hours to be arranged.*

X. Varieties of Fruits.—Orchard and bush fruits. Study of types; origin, and history; classification, description, and methods of handling. Orchard management. *Two recitation credits and one laboratory credit per week, first term. Option for Seniors in Agriculture. Prerequisite: Horticulture III.*

XI. Advanced Vegetable Gardening.—Study of one or more crops selected by student. Practical work, research work, and text-book. *One recitation credit per week, first term. Option for Seniors in Agriculture.*

XII. Plant Breeding.—See Agronomy XI.

XIII. Landscape Gardening.—Origin, history, and underlying principles. Practical work in the laying out of grounds, formation of walks and drives; methods of planting for different effects; home planting. *Two recitation credits and one laboratory credit per week, throughout the year. Required of Seniors in Agriculture. Option for Seniors in Applied Science. Prerequisite: Botany I and II.*

XIV. Arboriculture.—Study of ornamental trees, shrubs, and other plants, both native and exotic, which are used in landscape gardening. This course is designed to enable the student to become familiar with the character, habits, and adaptation of ornamental plants. *One recitation and one laboratory credit per week, first term. Option for Seniors in Agriculture.*

XV. Tree Surgery.—A study of methods used in treating diseases of trees and shrubs. Treatment of insect injuries, preventive and remedial measures to be used in case of neglect, and mechanical injuries, such as chaining and bolting. Cement filling of cavities. *One recitation and two laboratory credits per week, second term. Option for Seniors in Agriculture.*

A. Vegetable Gardening.—Fundamental principles of vegetable growing. Practical work in cold frames, hotbeds, and garden planting. *Two recitation credits and one laboratory credit per week, second term. Required of Short-Course students in Agriculture, second year.*

B. Fruit Culture.—Study of fruits; propagation; planning fruit gardens and plantations; harvesting and packing; care. *Three recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.*

C. Nursery Practice.—Propagation by seed, cuttings, grafting, budding, starting, and care of nursery. Selection of stock, and initial pruning. *One recitation and one laboratory credit per week, first term. Required of Short-Course students in Agriculture, second year.*

D. Floriculture.—Propagation of flowering plants, care of window gardens, design of flowerbeds and borders. *Two laboratory credits, second term. Required of Short-Course students in Home Economics, first year.*

E. Spraying and Pruning.—A study of the methods used in combating insect pests and plant diseases. Preparation and application of fungicides and insecticides. Study of nozzles, pumps, etc. *One recitation and one laboratory credit per week, second term. Required of Short-Course students in Agriculture, second year.*

F. Home Grounds.—A study of the materials to use, the essential principles of the art. Practice in designing, planting, and care of home grounds. *Two recitation credits per week, second term. Required of Short-Course students in Agriculture, second year.*

## Botany.

PROFESSOR MERROW.

The aim of the department is to give a general knowledge of plant life, followed by subjects of an economic nature. The college is

well located for carrying on this line of work. The native flora is extensive, and an abundance of material is furnished by the cultivated plants of the gardens and fields of the college farm. The greenhouses supply fresh material for winter use, and the herbarium of 4,300 specimens is a useful reference collection. The laboratory is equipped with dissecting and compound microscopes, a microtome, paraffin bath, and simple physiological apparatus. Charts and models are provided for lecture demonstrations. A good working library, including several American and foreign periodicals, is an important factor in the outfit for botanical instruction.

### Subjects.

I. General Botany.—A study of common plants, their structure, physiology, evolution, and adaptation to environment. The work includes a brief study of molds, yeasts, and bacteria, designed as an introduction to problems in which these organisms play a part. *Two laboratory credits and one recitation credit per week, throughout the year. Required of Freshmen in Agriculture, Applied Science, and Home Economics.*

II. Economic Botany.—The systematic botany of crops and weeds. *Two laboratory credits and one recitation credit per week, first term. Required of Sophomores in Agriculture and Applied Science.*

III. Trees and Shrubs.—The determination of native and introduced trees and shrubs in summer and winter condition. *One laboratory or field credit per week, throughout the year. May be elected by students having a minimum of six credits in Botany.*

IV. Forestry.—The management of a southern New-England wood lot. *Two credits per week, second term. Required of Juniors in Agriculture. Elective in Applied Science.*

V. Histology.—Seed plants as studied by the usual histological methods of imbedding, sectioning, and staining. *Four laboratory credits and one recitation credit per week, first term. Elective.*

VI. Pathology.—Diseases caused by parasitic fungi and the remedies for them. *Four laboratory credits and one recitation credit per week, second term. Elective.*

VII. Assigned Work.—*Three credits, throughout the year. Elective for Seniors in Applied Science.*

A. Plant Life.—Elementary agricultural botany. *Two laboratory credits and one recitation credit per week, throughout the year. Required of Short-Course students in Agriculture and Domestic Science, first year.*



## Chemistry.

DR. LEIGHTON, MR. SMITH, DR. HARTWELL.

Instruction in this department begins in the Freshman year with experimental lectures, recitations, and laboratory practice in general and descriptive chemistry. The work is designed to give a thorough elementary knowledge of theoretical and descriptive inorganic chemistry, including the principal technical processes, and a brief account of the carbon compounds. As much attention as is practicable in a general course is given to the applications of the science to the problems of life. Two periods per week for the first half-year and three for the second half-year are devoted to the lectures and recitations, and three hours per week for a half-year to the practical work in the laboratory, where the student has an opportunity to verify some of the chemical theories and to become familiar with substances and their chemical behavior. During the second half of this year the laboratory period is devoted to qualitative analysis, which continues through the first half of the Sophomore year. The subject is taught in part by means of recitations and lectures, but mainly by work in the laboratory. Students are required to complete a systematic course in basic and acid analysis, and to analyze correctly a number of alloys, salts, and minerals.

Quantitative analysis is taught mainly by laboratory practice, but sufficient time is devoted to lectures and recitations to teach thoroughly the fundamental principles involved. The work comprises gravimetric and volumetric analysis, and the quantitative determination of salts, alloys, ores, minerals, and commercial and food products. In the course in technical gas analysis the student analyzes such gases as air, and illuminating and chimney gases. The work in assaying is designed to familiarize the student with the practical methods of sampling and assaying gold, silver, and lead ores. Determinative mineralogy, which includes blow-pipe analysis and crystallography, is taught by recitations and laboratory work. The student learns the physical properties of the common minerals, and their identification. The above subjects cover a comprehensive study of analytical chemistry, and are intended to give the student such theoretical and practical knowledge as to prepare him for analytical work of any kind.

The study of organic chemistry begins with a short course, designed to cover the general principles and methods, and to include



a description of the more important compounds. The subject is continued by those who wish to specialize in chemistry in a more extended course covering the aromatic series and the chemistry of the dyestuffs, and accompanied by laboratory work in organic preparations and analysis. The theoretical and basic principles of chemistry, with their general application, are thoroughly studied by recitation, lectures, and laboratory work in the course in physical chemistry.

The descriptive side of industrial chemistry, which comprises a general survey of the technical applications of chemical principles to the arts and industries, is studied by recitation work; while practical technical operations, such as textile coloring, suited to the needs of the individual student, are studied by laboratory practice. The principles and practice of the industrial preparation of iron, steel, and other metals from their ores are taught by recitation and lecture work in the course in metallurgy.

Agricultural chemistry, required of agricultural students in the Junior year, embodies the chemistry of soils and fertilizers, also the chemistry involved in the changes which take place during the growth of animals and plants, as well as in the storage or manufacture of the ordinary farm products.

Subject XXI is intended to familiarize the student with the general field of chemical literature, and to inculcate the habit of keeping up with the recent advance in chemical science by reports and discussion of articles appearing in the chemical journals. This course is preparatory for Subject XX, which involves original investigation.

The laboratory is supplied with water, gas, and compressed air at each desk; it is also well equipped with apparatus for the subjects mentioned below. Among the more important pieces of apparatus are a polariscope, microscope, sodium press, hot-air engine, five analytical balances, one assay balance, filter press, Wheatstone bridge, combustion furnace, bomb furnace, assay muffle, crucible and roasting furnaces, ore crusher and grinder.

A good working library, containing a large number of German, French and English chemical journals, is also accessible.

### Subjects.

I. General Chemistry.—*Two recitation and one and one-half laboratory credits per week, first term. Required of Freshmen in all courses. Mr. Smith.*

II. General Chemistry and Qualitative Analysis.—*Three recitation and one and*

*one-half laboratory credits per week, second term. Required of Freshmen in all courses. Dr. Leighton.*

III. Qualitative Analysis.—Basic and acid analysis; analysis of salts, industrial and natural products. *Three laboratory credits per week, first term. Required of Sophomores in all courses. Dr. Leighton and Mr. Smith.*

IV. Organic Chemistry.—*Three recitation credits and one laboratory credit per week, second term. Required of Sophomores in Chemical Engineering, Home Economics, Agriculture, and Applied Science. Elective for others who have completed Chemistry III. Mr. Smith.*

V. Organic Chemistry (advanced).—To be given alternate years. Given next in 1911. *Three recitation credits and one laboratory credit per week, first term. Required in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry IV.*

VI. Organic Chemical Laboratory.—*Three laboratory credits per week, second term. Required of Juniors in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry IV. Mr. Smith.*

VII. Quantitative Analysis.—Gravimetric and volumetric analysis. Analysis of minerals, ores, alloys, and industrial products. *Three laboratory credits per week, second term. Required of Sophomores in Chemical Engineering. Elective for others who have completed Chemistry III. Mr. Smith.*

VIII. Quantitative Analysis. *Three laboratory credits per week, first term; four and one half laboratory credits per week, second term. Required of Juniors in Chemical Engineering and Juniors who take the Chemical Option in Applied Science. Elective for those who have completed Chemistry III. Mr. Smith.*

X. Quantitative Analysis.—Food Analysis. *Four laboratory credits, first term. Required of Seniors in Home Economics. Elective for others who have completed Chemistry IV. Dr. Leighton.*

XI. Determinative Mineralogy.—*One and one-half laboratory credits per week, second term. Required of Juniors in Chemical Engineering and of Juniors who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry III. Mr. Smith.*

XII. Physical Chemistry.—To be given alternate years. Given next in 1912. *Three recitation credits and one laboratory credit per week, first term. Required in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry III. Dr. Leighton.*

XIII. Metallurgy.—*Two recitation credits per week, second term. Required of Seniors in Chemical Engineering. Elective for others who have completed Chemistry II. Mr. Smith.*

XIV. Agricultural Chemistry.—*Three recitation credits and one laboratory credit per week, first term. Required of Juniors in Agriculture. Prerequisite: Chemistry (I-IV). Dr. Hartwell.*

XV. Gas Analysis.—See Mechanical Engineering XV.

XVI. Industrial Chemistry.—*Four recitation credits per week, second term, Required of Juniors in Chemical Engineering and of Seniors who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry IV.* Mr. Smith.

XVII. Industrial Chemistry.—The work under this subject may be varied to suit the needs of individual students; including such subjects as technical analysis and textile coloring. *Three laboratory credits per week, second term. Required of Seniors in Chemical Engineering and of Seniors who take the Chemical Option in Applied Science. Elective for those who take Chemistry XVI.* Dr. Leighton.

XVIII. Assaying.—*Two laboratory credits per week, second term. Required of Seniors in Chemical Engineering.* Mr. Smith.

XIX. Physiological Chemistry.—*Four credits per week, second term. Required of Juniors in Home Economics.* Dr. Leighton.

XX. Assigned Work.—*Three credits per week, throughout the year. Required of Seniors in Chemical Engineering and Seniors who take the Chemical Option in Applied Science.* Dr. Leighton.

XXI. Reports and Discussion of Chemical Subjects and Recent Investigations.—*One credit per week, throughout the year; required of Juniors and Seniors in Chemical Engineering. Option for Juniors and Seniors in Applied Science.* Dr. Leighton.

XXII.—Electro-Chemistry. *Three recitation credits per week, second term. Required of Seniors in Chemical Engineering and of Seniors who take the Chemical Option in Applied Science.* Dr. Leighton.

A. Chemistry of Plant and Animal Life.—*Three recitation credits and one laboratory credit per week, throughout the year. Required of Short-Course students in Agriculture and Home Economics, first year.* Mr. Smith.

## Freehand Drawing.

MISS ELDRED.

The aim of the subjects described below is to supply the practice in drawing necessary for subsequent work in the science laboratories, to give an elementary knowledge of the history of art, and to develop some appreciation of the beautiful in art and nature. For the first term, the work comprises outline drawing in pencil, mainly from plant and animal forms. The work of the second term includes some consideration of perspective and of the principles of design. In the first term of the Sophomore year the home economics students consider the subject of color,—the principles of color harmony, and the use of color in design and decoration. The object of this work is to develop appreciation of color and to enable the student to exercise a

more intelligent and sensitive discrimination in its use. In the Junior year, special work is arranged for the first term to accompany and illustrate the home economics course, treating of the arrangement and decoration of the house. The brief course in the history of art aims to give some familiarity with the greatest achievements of past and present in architecture, sculpture, and painting. The department has a considerable equipment of illustrative material for this work, including a collection of about one hundred and fifty casts and over three hundred photographs of folio or larger size, with many smaller prints, among them two thousand University Prints, illustrating Greek and Roman sculpture, and the art of Italy, Germany, and the Netherlands.

### Subjects.

II. Pencil Drawing from Objects.—*One laboratory credit per week, first term. Required of Freshmen in Agriculture. One laboratory credit per week, throughout the year. Required of Freshmen in Applied Science and Home Economics. Five laboratory credits per week, first term. Elective for Freshmen.*

III. History of Art.—*Two recitation credits per week, second term. Required of Juniors in Home Economics. Two recitation credits per week, first term. Required of Seniors in Home Economics.*

IV. Color Problems.—*One laboratory credit per week, first term. Required of Sophomores in Home Economics.*

V. Drawing in Charcoal from Still Life and the Cast.—*Two laboratory credits per week, second term. Elective.*

VI. Pen-and-ink Drawing, Water-Color, or Pastel.—*Two laboratory credits per week, second term. Elective.*

VII. Modeling.—*Two laboratory credits per week, second term. Elective.*

VIII. Work Illustrating Home Economics VII.—*One laboratory credit, second term. Required of Juniors in Home Economics.*

## Economic and Social Science.

PRESIDENT EDWARDS.

### Subjects.

I. Political Economy.—Text-book, supplemented by lectures, readings, and essays. *Four recitation credits per week, first term, first twelve weeks. Required of Seniors in all courses.*

II. Agricultural Economics.—The study of agriculture as an industry, from the point of view of political economy. Includes a study of the agricultural



market; transportation of agricultural products; agricultural labor; farm ownership and tenancy; mortgages, etc. *Elective.*

III. Rural Sociology.—Movements of the farm population—causes and results; general social conditions of farmer, such as illiteracy, health, crime, etc.; personal and social traits developed by rural life; means of communication in rural communities; the rural school; agricultural education; the country church; farmers' organizations; federation of rural social forces. *Elective.*

## Home Economics.

PROFESSOR THOMPSON.

The aim of this department is to give both theoretical and practical training in the economic administration of the home. The laboratory is situated in a building by itself, which is finished and furnished in such a manner as to demonstrate the sanitary principles involved in proper kitchen arrangements. It is amply equipped with the most recent scientific cooking-apparatus, inclusive of thermometers, metric scales, different kinds of stoves, and individual utensils. The work in chemistry, biology, etc., is, however, carried on in the laboratories of those departments. There is a good home economics library, and students are expected to make intelligent use of the main library in reference work, as well as to study those bulletins of the Department of Agriculture and such state reports as deal particularly with the subjects of food and nutrition.

### Subjects.

I. Domestic Art.—A course in hand sewing; different kinds and combinations of stitches; drafting and cutting of patterns; machine practice; study of charts and tailoring systems; making of two undergarments and an unlined dress. *One laboratory credit per week, first term; and two laboratory credits per week, second term. Required of Freshmen in Home Economics.*

II. Elementary Cookery.—The economic use of fuels; the management of stoves and ranges; the study of cooking temperatures and processes; the care of utensils; practice in the cookery of a few typical foods. *One recitation and one laboratory credit per week, second term. Required of Freshmen in Home Economics.*

III a. Personal Hygiene.—This course considers the aim of personal hygiene as the maintaining of the most efficient human machine for the life needs of the individual. It endeavors to give and establish ideals of health and efficiency. *One recitation credit per week, first term. Required of all women Freshmen.*

III b. Euthenics.—The following topics are considered: environment of



human life; problems of adaptation to modern conditions and progress; personal aim; individual responsibility; factors in human efficiency. *One recitation credit per week, second term. Required of all women Freshmen.*

IV. Foods.—A systematic study is made of the food constituents, their sources, chemical composition, properties, nutritive and economic values. This course is accompanied by laboratory practice in the preparation of many representative foods. Class demonstrations are given from time to time. *Three recitation and one-half laboratory credits per week, first term; two recitation and one and one-half laboratory credits per week, second term. Required of Sophomores in Home Economics. Prerequisites: Chemistry I, II, Home Economics II.*

V. Household Methods and Management.—Lectures and discussions upon general housework, the principles of laundering, marketing, apportionment of income, maintenance of standards, household administration, social, legal, industrial, and educational problems of the family. *Two recitation credits per week, first term. Required of Sophomores in Home Economics.*

VI. Human Nutrition.—Composition of the animal body and its daily food requirements; methods of investigation employed in studying the nutritive function of foods; the changes effected by cooking and by the processes of digestion; balancing of dietaries; food economy. *Three recitation credits per week, first term. Required of Juniors in Home Economics. Prerequisites: Chemistry IV, Zoology III, Home Economics II, IV.*

VII. Home Decoration.—A study of the evolution of the house; its adaptation to modern conditions; the principles to be followed in planning, furnishing, and decorating the house from a sanitary and artistic standpoint. *Two recitation credits per week, first term. Required of Juniors in Home Economics.*

VIII. Dietetics.—Problems in nutritive ratios; the balanced dietary; hygienic combinations of foods; construction of menus; adaptation of the diet to age, occupation, and different climatic conditions. *One recitation and one laboratory credit per week, second term. Required of Juniors in Home Economics. Prerequisite: Home Economics VI.*

IX. Sanitation.—This course deals with household and public hygiene. Study of soils and drainage; house construction; heating, lighting, ventilation, and plumbing; water supply, sewage disposal, food infection. *Two recitation credits per week, second term. Required of Juniors in Home Economics. Prerequisites: Chemistry I, II, Botany I, Physics I.*

X. Food Preservation.—Study of the processes of decomposition, fermentation, and putrefaction; practice in preserving foods by drying, salting, and sterilization; preparation of jelly, pickles, and canned fruits; discussion of commercial preservatives. *One laboratory credit per week, first term. Required of Seniors in Home Economics. Prerequisite: Home Economics IX.*

XI. Hygiene and Care of Children.—A study of the physical development of children; care of infants and young children; school hygiene. *Two recitation credits per week, first term. Required of Seniors in Home Economics. Prerequisite: Psychology. Open to Juniors and Seniors in other courses.*

XII. Home Nursing.—Care of the sickroom and patient; administration of medicines; recording of symptoms; accidents and emergencies; hygiene of infectious diseases; antiseptics and disinfectants. *Two recitation credits per week, second term. Required of Seniors in Home Economics. Prerequisite: Home Economics IX.*

XIII. Therapeutic Cookery.—This course includes the study of abnormal conditions of digestion and metabolism, relation of food to specific diseases, cookery for the sick and convalescent. *One recitation and one laboratory credit per week, second term. Required of Seniors in Home Economics. Prerequisites: Home Economics IV, VI, VIII, X.*

XIV. Assigned Work.—This may be a problem in the biological, chemical, physiological, or economic aspect of the work in Home Economics. *Three recitation and two laboratory credits per week, second term. Required of Seniors in Home Economics.*

XV. Teaching of Home Economics.—Purpose and method of the work; courses of study, equipment, etc. *One recitation credit per week, second term. Elective for Seniors in Home Economics.*

XVI. History of Home Economics.—Development of home economics movement; a study of the work as presented in different types of institutions, and its industrial, educational, and sociologic aspects. *One recitation credit per week, first term. Elective.*

XVII. Textiles.—A study of fabrics; processes and appliances studied with reference to their historic development; primitive industries; modern processes of manufacture; dyeing, spinning, and weaving. *Two recitation credits per week, second term. Elective. Prerequisite: History I, Home Economics I.*

XVIII. Dressmaking and Tailoring.—*Three laboratory credits per week, second term. Elective for students who have completed Home Economics I.*

XIX. Food Products.—Production, manufacture, and marketing of foods; factors affecting cost. *Two recitation credits per week, first term. Elective.*

XX. A Study of the Family.—Development of the domestic institutions; social ethics of the family; legal, industrial, and educational problems of the household. *Two recitation credits per week, second term. Prerequisite: Home Economics V. Elective.*

## DOMESTIC SCIENCE.

A. Household Technique.—This course is planned to give a knowledge of the processes involved in household work. It deals with the handwork of cooking and cleaning; care of rooms, table setting and serving, etc. *Two recitation credits per week, first term, first year. Required of Short-Course students in Domestic Science.*

B. Sewing.—Hand sewing; use of machine; drafting of patterns. *One laboratory credit, first term, first year. Required of Short-Course students in Domestic Science.*

C. Foods.—Study of the five food principles and their nutritive and physiological functions; practice in the cookery of vegetables, cereals, fruits, milk,

eggs, and meats. *Three recitation and one and one-half laboratory credits per week, second term, first year. Required of Short-Course students in Domestic Science.*

D. Dietetics.—Provides instruction in advanced cooking; special cooking for sick and convalescent; planning of meals; discusses food for different ages and conditions. *Three recitation and one and one-half laboratory credits per week, first term, second year. Required of Short-Course students in Domestic Science.*

E. Management of the House.—Considers the materials, qualities, amounts, and cost of house furnishing and supplies; lessons in marketing. *One recitation credit, second term, second year. Required of Short-Course students in Domestic Science.*

F. Hygiene.—Study of the living machine, its mechanism and functions; the right use and proper care of the human mechanism; home nursing and emergencies. *One recitation credit per week, second term, second year. Required of Short-Course students in Domestic Science.*

G. Textiles.—Study of the clothing fabrics; dressmaking. *One and one-half laboratory credits per week, second term, second year. Required of Short-Course students in Domestic Science.*

## Psychology and Education.

DR. SECHRIST, ASSISTANT PROFESSOR SPENCER.

I. History of Education.—Study of educational theory and practice from the historical point of view with special reference to modern scientific and industrial education. *Three recitation credits per week, first term. Required of Seniors in Applied Science and Home Economics.*

II. Psychological Principles of Education.—Study of the principles of teaching from the psychological point of view. *Two recitation credits per week, first term. Required of Seniors in Applied Science. Prerequisite: Psychology.*

III. Secondary Education.—Principles of teaching, with special reference to the aims of the secondary school; organization, management, and method in the high school. *Two recitation credits per week, second term. Required of Seniors in Applied Science. Prerequisite: Psychology and Education II and IV.*

IV. Psychology.—Structure and functions of mental life. Study of text-book is supplemented with experiments and with lectures on the practical applications of psychology. *Three recitation credits per week, first term. Required of Juniors in Applied Science and Home Economics.*

V. Ethics.—Study of ethical principles, with special reference to the problems of individual and social life. *Two recitation credits per week, second term. Elective for Seniors in Home Economics.*

VI. Esthetics.—Study of esthetic principles from the psychological point of view. *Two recitation credits per week, second term. Elective for Seniors in Home Economics. Prerequisite: Psychology and Education IV.*

VII. Sociology.—Text-book work and assigned readings. *Three recitation credits per week, second term. Required of Seniors in Home Economics.*

## Mechanical Engineering.

PROFESSOR WALES, MR. ELDRÉD, MR. EAMES, MR. PEASLEE.

It is the object of the work in the department of mechanical engineering to turn out broad-gauged, self-dependent men, well trained in engineering theory, familiar with the practical matters of construction and operation, and having some knowledge of the economic relations which the engineer and industrial development bear to modern society. In the endeavor to train men who will touch life, not at one point, but at many, the work of the department is supplemented and rounded out by extended and vigorous courses along the lines of electrical engineering, physics, mathematics, chemistry, English, history, modern languages, and political economy. The special work of the department of mechanical engineering divides itself naturally into the following general groups: shop practice, design, steam engineering, and experimental engineering. Each of the above groups is amplified and briefly described below:

### SHOP PRACTICE.

The object of this work is to give familiarity with principles, operations, possibilities, and management, rather than to develop the greatest dexterity in manipulation. Shop practice extends over three years of the course, and comprises forging and foundry work, pattern making, and machine-tool operation. The shops are exceptionally well equipped with machines and tools of all kinds. In the machine shop are six metal lathes, speed lathes, planes, 16-in. shaper, two drills, two tool grinders, drill grinder, milling machine, punching-press, vertical boring and turning mill, together with the usual assortment of tools and auxiliaries. The pattern shop is provided with lathes, circular saw, band saw, jig saw, dowel machine, surface and buzz planers, etc. Fifteen work-benches fully provided with the small tools of the pattern maker complete the equipment. The forge shop is equipped with the usual anvils, forges, fullers, swages, hardies, etc., while a full stock of patterns, shovels, riddles, flasks, and trowels is provided for the work in foundry practice. Enthusiasm is given to the work by the construction of things of real value—a new machine for the shop, or a piece of apparatus for the laboratory—instead of spending the whole time on worthless “exercises.”



## DESIGN.

The work along the lines of design extends throughout the four years, beginning with freehand and mechanical drawing and ending with machine design and power-plant design in the Senior year. Leading up to this final work are the terms of mechanical drawing, descriptive geometry, mechanism, valve gears, dynamics of machines, mechanics, strength of materials, hydraulics, and thermo-dynamics. All the forces of correct theory and the practice of the most successful builders are brought to bear upon the solution of definite, practical problems.

## STEAM ENGINEERING.

Steam engineering begins in the Junior year and runs through the remainder of the course. A rigorous study of the mathematical theory of thermo-dynamics supplies the foundation for the study of boilers and engines, design and economy, and the various devices and auxiliaries of the power plant. In the Senior year is considered the particular branch of heating and ventilating. In this year, also, the subject of power plants is taken up, which applies all the previous training in steam engineering, and which brings together and unifies all allied subjects.

## EXPERIMENTAL ENGINEERING.

This subject, which extends throughout the Junior and Senior years, is intended to fix the theory developed in all the other lines of work. Instruction is given by means of lectures and laboratory tests. The student becomes familiar with the theory, construction, use, and calibration of the instruments and apparatus used by the engineer, and gains experience in making accurate standard and special tests. The work is divided into four groups: one dealing with the chemical problems of engineering—testing of gases, oils, fuels, feed water, etc.; a second, with general calibration and testing; a third, with the study and tests of structural materials; and the fourth, with general power-plant testing. In power-plant testing the students make the necessary plans and preparations, perform the experimental work, and prepare formal reports, with recommendations for improvement in economy, etc. These tests are made not only on the college power-plants, but on those of manufacturing establishments of the state. The equipment for experimental work



comprises several boilers and steam engines, large steam pump, hot-air engine, gas engine, feed-water heaters, several steam and gas engine indicators, steam calorimeters, tanks, scales, injectors, water turbine, hydraulic ram, meters, gauges, 50,000-lb. tension and compression machine, apparatus for oil and gas testing, fuel calorimeter, complete outfit for testing cements and concretes, etc. Throughout the work the greatest stress is laid upon the correct calculation and interpretation of results, and accuracy and self-dependence are developed to the fullest.

### Subjects.

I. Mechanical Drawing.—Lettering, freehand sketching, use of drafting tools, geometrical problems, projections, machine parts. *Three laboratory credits per week, first term; two laboratory credits per week, second term. Required of Freshmen in Engineering. One and one-half laboratory credits per week, first term. Required of Juniors in Home Economics.* Mr. Eames.

II. Forge and Foundry.—Forging, drawing, bending, welding, etc. Principles of moulding, core making, and casting. *Three laboratory credits per week, first term. Required of Freshmen in Engineering and Short-Course students in Engineering, first year.* Mr. Eldred.

III. Pattern Making.—Use of tools, bench and lathe work, pattern making. *Three laboratory credits per week, second term. Required of Freshmen in Engineering and Short-Course students in Engineering, first year.* Mr. Eldred.

IV. Graphic Statics.—Force and funicula polygons with applications in the determination of stresses in framed structures. *Two recitation credits per week, second term. Required of all Sophomores in Engineering.* Mr. Eames.

V. Descriptive Geometry.—Elementary principles; problems relating to the point, line, plane, cylinder and double curved surfaces of revolution, intersections, and developments. *One recitation and two laboratory credits per week, first term. Required of all Sophomores in Engineering.* Mr. Eames.

VI. Mechanical Drawing.—Detail and assembly drawings, elementary machine design. *Three laboratory credits per week, second term. Required of Sophomores in Mechanical, Electrical, and Civil Engineering.* Mr. Eames.

VII. Machine Shop.—Hand work in chipping and filing, use of machine tools, construction of machines. *Three laboratory credits per week, second term. Required of Sophomores in Mechanical and Electrical Engineering. Three laboratory credits per week, throughout the year. Required of Short-Course students in Engineering, first year. One and one-half laboratory credits per week, second term. Required of Sophomores in Civil Engineering.* Mr. Eldred.

IX. Heat Engineering—Thermo-dynamics.—Mathematical development and discussion of the laws of thermo-dynamics, and their application to perfect gases, saturated and superheated steam. Theory of air compressors, pneu-

matic machinery, hot-air engines, gas engines, and refrigerating machines. Boilers, engines, engine economy, effect of cylinder walls, compounding, superheating, use of jackets, varying cut-off, speed, pressure, etc. Flow of fluids, injectors, and thermo-dynamic principles applied to the steam turbine. *Three recitation credits per week, throughout the year. Required of Juniors in Mechanical and Electrical Engineering; and for twenty-seven weeks, of Juniors in Chemical Engineering.* Professor Wales.

X. Applied Mechanics.—Forces, composition and resolution, parallel forces, moments, couples, centres of gravity, velocity, acceleration, energy and momentum, falling bodies and projectiles, centrifugal force, moment of inertia, radius of gyration, angular momentum, energy of rotating bodies, impact, etc. Strength of material, stresses in structures, riveted joints, beam theory, struts, columns, shafting, springs, etc. Solution of practical problems. Text, Lanza's Applied Mechanics. *Five recitation credits per week for twenty-four weeks. Required of Juniors in Mechanical, Electrical, and Civil Engineering, and of Juniors in Chemical Engineering for the first term.* Professor Wales.

XI. Hydraulics.—General principles, head and pressure, center of pressure, velocity of discharge, flow through orifices and over weirs, Bernouilli's theorem, flow through pipes, flow through conduits and canals, energy of flow, horse-powers, hydraulic machinery, rams, turbines, centrifugal pumps, and Pelton wheels. Merriman's Treatise on Hydraulics. *Five recitation credits per week, for last twelve weeks of second term. Required of Juniors in Mechanical, Electrical, and Civil Engineering.* Professor Wales.

XII. Mechanism.—Instantaneous centers, centroids, lobed wheels, belts, pulleys, four-bar linkages, graphical determination of velocity ratios, quick-return motions, straight-line motions, pantographs, trains of gears, epicyclic trains, tooth gearing, epicycloidal and involute teeth, bevel wheels, etc. Schwamb and Merrill's Mechanism. *Three recitation credits per week, first term. Required of Juniors in Mechanical and Seniors in Chemical Engineering.* Mr. Eames.

XIII. Valve Gears and Dynamics.—Plane slide valves, piston valves, riding cut-off valves; Joy and Marshall gears; Stephenson, Gooch, and Walscheart link motions; drop cut-off valves; Corliss, Brown, and Putnam valves; Peabody's Valve Gears. Lectures and references. *Three recitation credits per week, second term. Required of Juniors in Mechanical Engineering.* Mr. Eames.

XIV. Machine Shop (continuation of subject VII.)—Advanced work in machine construction. *Three laboratory credits per week, throughout the year. Required of Juniors in Mechanical Engineering, and Short-Course students in Engineering, second year.* Mr Eldred.

XV. Experimental Engineering a.—Lectures and laboratory work in gases, oils, and fuels; flue-gas analysis, calculation of air per pound of coal, loss due to excess air and to imperfect combustion; analysis of fuel gases and calculation of heating values; determination of heating values by the Junkers and Parr calorimeters; study of gases in producer and gas-engine work. *Two laboratory credits, first term. Required of Juniors in Mechanical and Electrical Engineering, and Seniors in Chemical Engineering.* Professor Wales.

XVI. Experimental Engineering b.—General calibration and testing of engineering instruments and apparatus; gauges; planimeter; manometers; indicators; Prony brakes; scales; valve setting by measurement and by the indicator; Carpenter calorimeter; Peabody calorimeter; flow through orifices; weirs; nozzles; Pitot tube; meters; Venturi meters; hydraulic ram; turbine, etc. *Two laboratory credits per week, second term. Required of Juniors in Mechanical, Electrical, and Civil Engineering.* Professor Wales and Mr. Eames.

XVII. Experimental Engineering c.—Properties of materials. Lectures on the metallurgy of iron and steel; effects of impurities; cold-working; repeated stresses; tensile, compressive, and shearing strengths; ductility; resilience, etc.; copper, brass, bronze, and other alloys; timber, stone, and brick. The manufacture of natural and Portland cements; effects of over- and under-burning, overliming,  $\text{SO}_3$ , etc.; discussion of tests and their interpretation. Laboratory work is parallel with lectures. Tensile strengths of cast-iron, wrought-iron, and steel; compressive strength of metals, timber, concrete, cement; shearing tests of metals; transverse tests of timber and iron; stress-strain diagram, elastic limit, yield point, modulus of rupture; tensile tests of cement; pat tests, boiling tests; specific gravity; fineness; time of set, etc. Determination of the best proportions of cement, sand, and rock of given characteristics. *Two lectures and two laboratory credits per week, first term. Required of Seniors in Mechanical, Electrical, and Civil Engineering.* Professor Wales and Mr. Eames.

XVIII. Experimental Engineering d.—Hot-air engine, gas engine, steam pump, injectors, transmission dynamometers; boiler tests; complete tests of power plants; outside work on the H. P. of a stream, with tests of hydraulic power plant; outside tests of manufacturing plants, with calculations, reports, and recommendations. *Two laboratory credits per week, second term. Required of Seniors in Mechanical Engineering.* Professor Wales.

XIX. Heating and Ventilation.—Discussion of the principles and practice of the various systems of heating and ventilating—direct and indirect, hot-air, hot-water, pressure steam, exhaust steam, vacuum systems, fans, blowers; calculation of ventilation and radiation; flues, pipes, and radiators; air troubles; central heating systems with central power plants; design of heating system for a given building. *One recitation credit per week, second term. Required of Seniors in Mechanical Engineering.* Professor Wales.

XX. Machine Design.—Design of machine parts from considerations of the motions involved, strength, rigidity, and friction; design of a complete machines calculations with design of some type of engine, starting with given requirement; of H. P., speed, etc., and with an assumed theoretical indicator card. *Three laboratory credits per week throughout the year. Required of Seniors in Mechanical Engineering.* Mr. Eames.

XXI. Power Plants and Power-Plant Design.—Study of the various types—as to choice, location, installation, and operation; prime movers, their accessories and auxiliaries.

Steam Plants.—Study of the effects on economy, range, and reliability of simple or compound, condensing or non-condensing engines with various valve gears, throttling and cut-off governors, different boiler installations, feed-water heaters, economizers, pressure regulators, pumps, injectors, mechanical stokers,



forced and induced draft, chimneys, etc.; calculations of proper sizes, powers, and strengths of machines and apparatus of the power plant; methods of improving economy. The place of the steam turbine in power-plant work.

Hydro Plants. Discussion of the types of hydraulic machinery, their efficiency, and the particular conditions to which each is best adapted. This will be a development of the previous work in hydraulics to meet the need of the power engineer.

Gas-Producer Plants.—The different suction and pressure producers, theory, capacity, future, etc.; gas engines, from both the thermo-dynamic and the mechanical points of view. *Two lecture credits and one laboratory credit per week, first term. Required of Seniors in Mechanical Engineering. Two lecture credits per week, first term. Required of Seniors in Electrical Engineering.* Professor Wales.

XXII. Assigned Work.—This may be of the nature of research or of specialized study along some particular line of engineering. Options are offered in theory of elasticity, advanced hydraulics, etc. *Three credits per week, throughout the year. Required of Seniors in Mechanical Engineering.*

XXIII. Dynamics of Machines.—Analysis of stresses, effects of inertia, balance, reciprocating parts, flywheels, design of high-speed engines and machinery. *Two recitation credits per week, second term. Required of Seniors in Mechanical Engineering.* Professor Wales.

XXIV. Works Management.—The economics of the shop and factory, cost-keeping, efficiency in production. *One lecture credit per week, second term. Required of Seniors in Mechanical Engineering.* Professor Wales.

XXV. Elements of Thermo-dynamics.—A non-mathematical discussion of boilers, engines, pumps, and power apparatus for civil engineers. *Three recitation credits per week, first term. Required of Juniors in Civil Engineering.* Mr. Eames.

A. Mechanical Drawing.—Lettering, sketching, use of drafting tools, projection drawing, representation of machine parts. *Three laboratory credits per week, throughout the year. Required of Short-Course students in Engineering, first year.* Mr. Peaslee.

B. Mechanical Drawing.—Detail and assembly drawing, elementary machine design. *Three laboratory credits per week, throughout the year. Required of Short-Course students in Engineering, second year.* Mr. Peaslee.

D. Mechanical Movements.—Belts, pulleys, gearing, screw gearing, differential screws, tackles, hoists, hydraulic jacks, inclined planes, differential pulleys, pumps, crank and rocker, sliding and swinging block mechanisms, shafts, hangers, etc., cams and their design. *Three recitation credits per week, throughout the year. Required of Short-Course students in Engineering, first year.*

E. Engineering Theory.—An elementary discussion of types of engines, valve gears, governors, etc., boilers, types, corrosion and incrustation, combustion, methods of firing, draft, safety valves, boiler H. P. testing; lubricants and lubrication; gas engines; elementary study of materials; practical electricity. *Five recitation credits per week, throughout the year. Required of Short-Course students in Engineering, second year.*

F. Applied Electricity.—Elementary theory, wiring, motors, dynamos, etc. *One recitation credit and two laboratory credits per week, throughout the year. Option for Short-Course students in Engineering.*

## Electrical Engineering.

PROFESSOR DICKINSON, MR. CLOKE, MR. PEASLEE.

The aim of the course in electrical engineering is to give the student such training in the fundamental principles of the subject as will fit him to take up, in an intelligent and effective manner, any line of engineering work requiring special electrical knowledge. Instruction is given in both classroom and laboratory, the aim of each method of instruction being to supplement the other, and to develop resourcefulness and the habit of independent thought on the part of the student.

### Subjects.

I. Theory of Direct Currents.—A detailed study of the theory of direct-current apparatus. The theory of dynamos, motors, and auxiliary apparatus. *Three recitation credits per week, first term. Required of Juniors in Electrical Engineering and of Seniors in Mechanical and Civil Engineering.* Mr. Cloke.

II. Direct-Current Laboratory.—A course following Physics V, and consisting of tests of various types of direct-current apparatus. These include magnetization and characteristic curves of different types of machines, as well as tests for efficiency, regulation, temperature rise, and tests of a similar nature. *Three laboratory credits per week, second term. Required of Juniors in Electrical Engineering and of Seniors in Mechanical Engineering.* Mr. Cloke.

III. Electrical Measurements.—A course designed to familiarize the student with physical and electrical units, fundamental and derived; the electrical standards of E. M. F., current, and resistance; and with the methods employed in the simpler electrical measurements. *One recitation credit per week for last nine weeks, second term. Required of Sophomores in Electrical Engineering.* Mr. Cloke.

IV. Theory of Alternating Currents.—Recitations and lectures. The elements of the theory of alternating currents and of alternating-current machinery. This course includes the simpler theories regarding the action of A. C. dynamos, motors, converters, and transformers. *Two recitation credits per week, second term. Required of Juniors in Electrical Engineering and of Seniors in Mechanical Engineering.* Professor Dickinson.

V. Theory of Alternating Currents.—Recitations and lectures, continuing subject IV. The more advanced theories regarding the effect of inductance and capacity in A. C. circuits, and of the action of A. C. machinery, are discussed. Assigned readings and reports are a feature of the subject. *Three recitation credits per week, throughout the year. Required of Seniors in Electrical Engineering.* Professor Dickinson.



VI. Alternating-Current Laboratory.—A course following Physics VII, consisting of tests of different types of alternating-current apparatus, such as single and polyphase generators and motors, induction motors, converters, and transformers. *Three laboratory credits per week, throughout the year. Required of Seniors in Electrical Engineering.* Professor Dickinson.

VII. Design of Electrical Machinery.—General principles of the design of electrical apparatus, including a direct and an alternating current generator. *Three laboratory credits per week, second term. Required of Seniors in Electrical Engineering.* Professor Dickinson.

VIII. Telephone Engineering.—A consideration of the development of the modern telephone, with special reference to the common battery systems. *One recitation credit per week, first term. Required of Seniors in Electrical Engineering.* Mr. Peaslee.

X. Transmission of Energy.—A study of systems of high-tension distribution, the effect of capacity and inductance, the construction of lines, their protection, and the troubles developing in high-tension work. *Two recitation credits per week, first term. Required of Seniors in Electrical Engineering.* Professor Dickinson.

XI. Electric Railway Engineering.—A discussion of the economic considerations in the development of an electric railway, methods of construction, the location of the generating station, the design of the distributing system, types of motors, and systems of control. *Two recitation credits per week, second term. Required of Seniors in Electrical Engineering.* Mr. Cloke.

XII. Assigned Work. Thesis work is assigned to those Seniors possessing special aptitude for original research. Other students are assigned special work in the laboratories of the department. *Three laboratory credits per week, throughout the year.* Professor Dickinson.

## Civil Engineering.

PROFESSOR WEBSTER, MR BILLS.

It is the purpose of this course to give the student such training in the fundamental principles of engineering as so prepare him for the duties and opportunities that may be offered in the various fields of civil engineering. With this object in view, application of the theories and principles learned in the classroom is made in the field, laboratory, and drafting-room. An effort is also made to give the student as liberal a training in the sciences and arts as his limited time will permit, but the primary purpose is to prepare him for one definite line of work.

In order to widen the scope of the student's opportunities, the name of the department has been changed from Highway Engineering to Civil Engineering, and corresponding changes have been made

in the course of study. However, owing to the growing importance of highway engineering in this state and throughout the country in general, considerable emphasis is still placed on this phase of engineering work. The state appropriates annually a sum of money, which is expended under the direction of the instructor and students of the department, in the construction and maintenance of roads on the college property. In this way practical experience is obtained in highway engineering.

The equipment of the department consists of levels, transits, compasses, rods, tapes, chains, drafting instruments, etc., and testing machines, to which the student has access. He also has free use of the library, in which are found the leading engineering journals, and many of the principal works on various engineering subjects.

### Subjects.

I. Surveying.—Instruction is given by means of recitations, field and laboratory work, in the theory, use, and adjustments of the compass, level, and transit. The field work includes the prolongation of straight lines, determination of distances, angles, areas, boundaries, corners, and exercises in leveling, etc. Maps are made from the field notes. *One recitation and two field credits per week, first term. Required of Sophomores in Mechanical, Electrical, and Civil Engineering.*

II. Topographic Surveying.—A study is made of the theory and use of the plane table, and of the transit and stadia in making topographic surveys. A complete topographic survey based on a system of triangulation is made, including the completion of a map. *One recitation and two field credits per week, second term. Required of Sophomores in Civil Engineering.*

III a. Railroad Engineering.—The work consists of a reconnaissance, a preliminary and a location survey of a short line of railroad, for the purpose of giving the student sufficient work to familiarize him with the methods in actual practice. A set of notes is kept by each student, from which a map, a profile, and estimates are made. A study is also made of the properties of curves, switches, frogs, turnouts, and the spiral, and the methods of locating these in the field. *Five credits per week, divided between field and recitation as seems advisable, first term. Required of Juniors in Civil Engineering.*

III b. Railroad Engineering.—The principles of economic railroad construction and maintenance; railway appliances, ballast, and roadbed, culverts and trestles, turnouts, sidings, yards, terminals, signaling, locomotive and grade problems, betterment surveys, etc. *Three recitation credits per week, second term. Required of Juniors in Civil Engineering.*

IV. Graphic Statics.—Instruction is given in graphic statics and its application in the design of simple framed structures. *Two recitation credits per week, first term. Required of Juniors in Civil Engineering.*

V. Roads and Pavements.—The theoretical work of this course consists of a discussion of the principles and details involved in the location, construction and maintenance of earth, gravel, and macadam roads, together with a discussion of the methods of construction, durability, maintenance, and assessment of cost of the various kinds of pavements used on city streets. The field work consists in the construction of a gravel or macadam road on the college grounds. *Three recitation credits and one field credit per week, second term. Required of Juniors in Civil Engineering.*

VI. Bridge Details.—The work in this course consists in making a tracing of a shop drawing, estimating the weight and determining the efficiency of the various members of a highway bridge. *Two laboratory credits per week, first term. Required of Seniors in Civil Engineering.*

VII. Bridge Analysis.—Instruction is given in the computation of stresses in the various types of bridges by graphical and algebraic methods under different conditions of loading. *Two recitations credits per week, first term. Required of Seniors in Civil Engineering.*

VIII. Bridge Design.—The student designs a plate girder and a bridge, makes the shop details, and a set of working drawings. *Three laboratory credits per week, second term. Required of Seniors in Civil Engineering.*

IX. Masonry Construction.—This course deals with the materials of masonry, including brick, stone, lime, and cement; the theory of masonry structures, including foundations for buildings, bridges, and piers; the construction of retaining walls, culverts, bridge abutments; masonry dams and arches. The student is directed to important articles in the current literature of the subject, and a systematic and thorough laboratory course on cement testing is given. *Two recitation credits and one laboratory credit per week, first term. Required of Seniors in Civil Engineering.*

X. Reinforced Concrete.—A study is made of the principles of mechanics underlying the design of reinforced concrete. Working stresses and economical proportions are considered, also the application of reinforced concrete construction to building construction, arches, retaining walls, dams and miscellaneous structures. *Two recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XI. Sewerage.—A discussion of the separate and combined systems of sewers; relation of rainfall to storm-water flow; hydraulics of sewers; removal of house sewage; the design and construction of sewers and method of sewage disposal. *Two recitation credits per week, first term. Required of Seniors in Civil Engineering.*

XII. Water Supply.—A discussion of the quantity of water required, sources of supply, flow of streams, and of ground water. Instruction is also given in the general arrangement of waterworks, loss of head in flow of water through pipes, stresses in dams and water towers. Works for the purification and distribution of water are discussed, including reservoirs, settling basins, pumping machinery, etc. *Three recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XIII. Tunneling.—A study of the methods of making tunnel surveys and of the modern methods employed in tunnel construction. *One recitation credit per week, second term. Required of Seniors in Civil Engineering.*

XIV. Contracts and Specifications.—A study of the fundamental principles of the law of contracts, and their application to engineering work. *Two recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XV. Assigned Work.—With the advice and consent of the head of the department, the student elects three hours' work in the Senior year. This may be research, thesis, or recitation and laboratory work, depending upon the qualifications of the student. *Three credits per week, throughout the year. Required of Seniors in Civil Engineering.*

XVI. Vacation Reading.—Systematic reading during vacations on some topic assigned by the head of this department.

XVII. Metal Structures.—The graphical determination of stresses in steel mill buildings. *One laboratory credit per week, second term. Elective for Seniors in Civil Engineering.*

XVIII. Irrigation Engineering.—This includes a study of the impounding, diverting, flow, and measurement of water, quantity acquired, canals, canal works, storage reservoirs, wasteways, etc. *Three recitation credits per week, first term. Elective for Seniors in Civil Engineering.*

## Geology and Mineralogy.

DR. WHEELER, DR. LEIGHTON, MR. SMITH.

GEOLOGY.—Under this subject historical geology is considered in outline, attention being given, also, to those phases of dynamical and structural geology which are particularly important. Special attention is given to rock weathering and soil formation, and to those characteristics of rocks which are of chief importance in connection with road construction.

DETERMINATIVE MINERALOGY.—A short course dealing with the elements of crystallography is given, together with the physical and chemical characteristics of minerals, especially of the rock-making minerals composing our soils. Laboratory work in blowpipe analysis and physical determination of minerals follows the crystallography.

### Subjects.

I. Geology.—*Two recitation credits per week, second term. Required of Juniors in Civil Engineering and Sophomores in Agriculture.*

II. Mineralogy.—See Chemistry XI.



## History.

PRESIDENT EDWARDS, ASSISTANT PROFESSOR SPENCER.

I. Social, Economic, and Industrial History of the United States.—*Four recitation credits per week, second term. Required of Juniors in all courses.*

II. Government and Politics in the United States.—*Four recitation credits per week, first term, last six weeks; and second term, first six weeks. Required of Seniors in all courses.*

## English and Modern Languages.

DR. SECHRIST, ASSISTANT PROFESSOR SPENCER, MISS MYRICK, MRS. HADLEY.

In all the college courses leading to a degree, English is required throughout the first three years and during twelve weeks of the Senior year. The first two years, a study is made of the principles of clear thinking and effective expression as exemplified in modern literary and scientific prose; however, the greater part of the time is devoted to the writing of themes and to oral expression, special stress being laid on exposition and argument. In the later and more advanced stages of the work, a systematic study is made of literature as an art according to the principles of criticism, the controlling aim being to deepen the appreciation of poetry in its various forms and functions, in its ethical import and its philosophy.

Besides the work in English, two years of foreign language work are required in all college courses leading to a degree, except mechanical, electrical, and civil engineering, where the requirement is one year. Preference is given to German, but French is also offered.

The library is a most important factor in the work of the department, as the English language and literature are represented in it by some twelve hundred carefully selected volumes, and the French and German literatures by about six hundred.

### ENGLISH.

I. Rhetoric and Composition.—Studies in the method of modern prose with analysis of models of literary and logical form. Daily practice in the various forms of composition, special stress being laid on Exposition. *Three recitation credits per week, throughout the year. Required of Freshmen in all courses.*

II. Newspaper Work.—News writing, reporting, news values, proof-reading,



editorials. *One recitation credit per week, first term. Required of Sophomores in all courses.*

III. Argumentation. Theory and Practice (in connection with Oral Exp. II); brief-drawing. *One recitation credit per week, second term. Required of Sophomores in all courses.*

IV. Principles of Criticism.—Study of literary method with especial reference to lyric and epic poetry. Interpretation of classic examples in each form. *Four recitation credits per week, first term. Required of Juniors in all courses.*

V. The Drama.—The great character types of dramatic literature with Shakespearean tragedy as the central study. *Four recitation credits per week, last twelve weeks of the second term. Required of Seniors in all courses.*

VI. Composition.—Oral and written, in kind and amount according to individual need. *Not less than two recitation credits per week, last twelve weeks, first term; second term. Elective for Freshmen.*

A. Elementary English.—Composition, oral expression, assigned reading. *Five recitation credits, throughout the year. Required of Short-Course students in Agriculture, Domestic Science, and Engineering, first year.*

B. Elementary English.—A continuation of A, including, also, some instruction in civics and economics. *Three recitation credits, throughout the year. Required of Short-Course students in Domestic Science and Engineering, second year.*

### ORAL EXPRESSION.

I. Interpretive Reading.—The fundamentals of expression, pronunciation, articulation, the training of the voice. The intellectual element in expression: emphasis, inflection, phrasing—the reading of prose. The emotional element in expression: quality, force, pitch, rhythm—the reading of poetry. The elements of dramatic expression. *One recitation credit per week, first term. Required of Sophomores in all courses.*

II. Debating.—The theory of the subject with oral practice; taken with Argumentation (English III). *One recitation credit per week, second term. Required of Sophomores in all courses.*

III. Debating.—Instruction and practice in the art of debate. Two public debates will be given by the students. *One recitation credit per week, throughout the year. Required of Juniors in all courses.*

IV. Oratory and Extempore Speaking.—Theory and practice. This work is given in connection with the subjects of Government, Political Economy, and English V. *One recitation credit per week, throughout the year. Required of Seniors in all courses.*

### GERMAN.

I. Elementary German.—Grammar, dictation, conversation, reading of easy prose and poetry. *Three recitation credits per week, throughout the year. Required of Freshmen who do not offer German for entrance.*

II. Reading of texts portraying German life and institutions, composition, conversation. *Three recitation credits per week, throughout the year. Required of Sophomores in Agriculture, Applied Science, Home Economics, and Chemical Engineering.*

III. Scientific German.—*Three recitation credits per week, throughout the year. Elective for students who have taken I and II or their equivalents.*

IV. Scientific German.—*From three to five recitation credits per week, first term; Freshman year. Elective for Freshmen.*

## FRENCH.

I. Elementary French.—Grammar, dictation, conversation, reading of easy prose and poetry. *Three recitation credits per week, throughout the year.*

II. Reading of intermediate texts, composition, conversation, selections from Hugo's *Les Misérables* or similar work. *Three recitation credits per week, throughout the year.*

III. Scientific and Classical French.—*Three recitation credits per week throughout the year. Elective for students who have taken I and II or their equivalents.*

IV. Scientific French.—*From three to five recitation credits, first term; Freshman year. Elective for Freshmen.*

## SPANISH, ITALIAN.

I. Elementary Spanish or Italian.—*Three recitation credits per week, first or second term. Elective.*

## Mathematics.

The work in this department covers two distinct phases of mathematical training: the college and the short-course instruction. Throughout the regular college work, emphasis is laid both on the theory and direct application of the different subjects to the problems of engineering and agriculture. An attempt is made to present a working knowledge of arithmetic, algebra, and bookkeeping, and their practical use to short-course students.

## Subjects.

I. Higher Algebra.—*Five recitation credits per week, nine weeks, first term. Required of all Freshmen. Professor Tyler, Mr. Bills.*

II. Trigonometry.—*Five recitation credits per week, nine weeks, first term. Required of all Freshmen.* Professor Tyler, Mr. Bills.

VII. Trigonometry (completed).—*Five recitation credits per week, first four weeks, second term. Required of Freshmen in Engineering and Applied Science.* Professor Tyler, Mr. Bills.

VIII. Analytics.—*Five recitation credits per week, last fourteen weeks, second term. Required of Freshmen in Engineering and Applied Science.* Professor Tyler, Mr. Bills.

IX. Analytics (completed).—*Five recitation credits per week, first four weeks, first term. Required of Sophomores in Engineering.* Professor Tyler.

X. Calculus.—*Five recitation credits per week, last fourteen weeks, first term. Required of Sophomores in Engineering.* Professor Tyler.

XI. Calculus (completed).—*Five recitation credits per week, second term. Required of Sophomores in Engineering.* Professor Tyler.

XII. University Algebra.—*Three recitation credits per week, first term. Elective for Freshmen.*

XIII. Practical Computations.—*Three recitation credits per week, second term. Elective for Freshmen.*

F. Arithmetic.—*Five recitation credits per week, throughout the year. Required of students in the Short-Courses, first year.* Mr. Bills.

G. Bookkeeping.—*Four recitation credits per week, first term. Required of students in Short Courses, second year.* Mr. Bills.

H. Algebra.—*Five recitation credits per week, second term. Required of students in Short-Course Engineering, second year.* Mr. Bills.

## Military Science and Tactics.

LIEUTENANT STAHL.

All male students are required to attend exercises in military instruction during their attendance at the college, unless excused by reason of physical disability. Credit is given for this work on the same basis and under the same regulations as in other departments.

The war department furnishes for use in this instruction United States magazine rifles (Krag-Jorgensen pattern), swords, equipments, and ammunition for target practice. The cadets are organized this year into a battalion of two companies of infantry and band. Theoretical instruction is given by means of lectures and recitations,

and practical instruction by means of infantry drills in the school of the squad, the company, and the battalion. The aim of these military exercises is to improve the physique, to inculcate the habit of prompt and cheerful obedience and courtesy to rightfully constituted authority, and to exercise an elevating influence on the conduct of the corps of cadets.

Competitive drills are held annually between the companies of the battalion. The name of the best drilled company and its commander is placed on the battalion colors.

The names of such students of the graduating class each year as have shown special aptitude for military service will be reported to the adjutant-general of the army and also to the adjutant-general of the state.

### Subjects.

I. Practical Instruction.—Drills in the school of the squad, of the company, and of the battalion; target practice. *Two exercises of one hour each each per week, counting as one credit, throughout the year. Required of all the command.*

II. Theoretical Instruction.—United States Infantry Drill Regulations. Small Arms Firing Regulations. Manual of Guard Duty. Field Service Regulations of United States Army. *One recitation credit per week, throughout the year. Required of all Freshmen.*

## BATTALION ORGANIZATION, JANUARY 11, 1911.

## COMMANDANT,

HENRY G. STAHL, First Lieutenant, 6th U. S. Infantry.

## CADET OFFICERS AND NON-COMMISSIONED OFFICERS.

*Battalion.*

Major.....	D. E. WARNER.
First Lieutenant and Adjutant.....	H. N. BARLOW.
First Lieutenant and Quartermaster.....	C. R. WADE.
Sergeant-Major.....	R. W. RUPRECHT.
Quartermaster Sergeant.....	W. J. WHALEN.

*Company A.*

Captain.....	A. J. MINOR.
First Lieutenant .....	L. C. EASTERBROOKS.
Second Lieutenant.....	B. R. ROBINSON.
First Sergeant.....	H. A. SAFFORD.
Sergeant.....	C. M. BIGELOW.
Sergeant.....	J. F. NUGENT.
Sergeant.....	A. J. PATTERSON.
Sergeant.....	E. A. COMBER.
Corporal.....	E. G. DAVIS.
Corporal.....	E. A. TYLER.
Corporal.....	F. A. RICHMOND.
Corporal.....	R. C. HOPKINS.
Corporal.....	W. C. MATTHEWS.

*Company B.*

Captain.....	B. K. HARRIS.
First Lieutenant.....	C. R. GILCHREST.
Second Lieutenant.....	P. J. HEALY.
First Sergeant.....	R. W. KENT.
Sergeant.....	W. H. TULLY.
Sergeant.....	W. DOLL.
Sergeant.....	J. L. SULLIVAN.
Sergeant.....	H. L. MOUNCE.
Corporal.....	C. V. JOHNSON.
Corporal.....	F. H. BRIDEN.
Corporal.....	J. H. YOUNG.
Corporal.....	E. R. NOYES.
Corporal.....	R. I. ALEXANDER.



*Band.*

Chief Musician.....	H. B. ALBRO.
Principal Musician.....	C. P. HART.
Drum Major.....	C. H. LARKIN.
Sergeant.....	B. A. AHRENS.
Corporal.....	C. I. GOODCHILD.

**Physics.**

PROFESSOR DICKINSON, MR. CLOKE.

The instruction given in this department is intended to acquaint the students with the fundamental concepts of physical science. The work will be as broad as is consistent with the time and needs of the students.

This department is equipped with vernier and micrometer calipers, micrometer microscopes, comparator, dividing engine, cathetometer, simple and compound pendulums, and balances for exact measurements in mechanics. It has also apparatus for determining the coefficient of linear expansion and for the determination of specific and latent heats, a weight thermometer apparatus for determining the density of liquids and solids, a thermo-couple for direct determination of temperatures up to  $1650^{\circ}$  C., Melloni's apparatus for investigation in radiant heat, and apparatus for determining the mechanical equivalent of heat.

In light, the laboratory is equipped to carry on the usual college work. The department has apparatus for finding the focal length of lenses and mirrors: a Pulfrich refractometer; spectrometers; an interferometer (Institute of Technology patterns); photometer; total reflectometer; and many smaller instruments, including simple and compound microscopes. The greater part of the above listed apparatus is new, having been recently purchased of foreign makers.

The laboratory for exact measurements in electricity and magnetism is also fitted up with new apparatus recently purchased of the Leeds and Northrup Company of Philadelphia, and among other instruments are several types of D'Arsonval galvanometers; Wheatstone bridges, slide wire and post-office patterns; standard cells (Clark and Weston types); standards of resistance, capacity, and self-induction; magnetometers; voltmeters; and many smaller instruments sufficient to carry on the usual college work in electrical measurements. For advanced electrical measurements the department

is provided with Weston and Thompson ammeters, and voltmeters with both low and high ranges, wattmeters, a Leeds and Northrup alternating and direct current comparator.

In the subject of sound the department is provided with apparatus for the determination of wave-length, pitch, frequency, etc.

### Subjects.

I. Descriptive Physics.—A course designed for students in Agriculture. Considerable time is given to the discussion of the principles of mechanics as applied to farm machinery. The course furnishes an excellent foundation for further work in agricultural physics. *Five recitation credits per week, second term. Required of Sophomores in Agriculture and Home Economics.* Mr. Cloke.

II. General Physics.—A mathematical treatment of the subject. *Four recitation credits per week, throughout the year. Required of all Sophomores in Engineering and Teachers' Course in Applied Science.* Professor Dickinson.

III. Laboratory Physics.—A course in physical measurements intended to teach students methods and to form a basis for future engineering work. The calculation of results will be given special attention. *One and one-half laboratory credits per week, throughout the year. Required of Sophomores in Engineering and Teachers' Course in Applied Science.* Mr. Cloke.

IV. Electrical Measurements.—A course of lectures treating of the theory and manipulation of electrical measuring instruments. *One recitation credit per week, first term. Required of Juniors in Electrical Engineering.* Professor Dickinson.

V. Electrical Measurements Laboratory.—Direct-currents measurements, resistance, potential current, magnetic properties of iron and steel, calibration of direct-current instruments. *One and one-half laboratory credits per week, first term. Required of Juniors in Electrical Engineering.* Professor Dickinson.

VI. Principles of Illumination.—A study of different sources of light, the measurement of candle power, and the principles of illuminating engineering. *One recitation credit and one and one-half laboratory credits per week, first term. Required of Juniors in Electrical Engineering.* Professor Dickinson.

A. Elementary Physics.—A course designed to give the student a grasp of the more important physical principles underlying Engineering work. *Three recitation credits per week, throughout the year. Required of Short-Course students in Engineering, second year.* Mr. Cloke.

### Woodwork.

MR. T. C. RODMAN.

H. Farm Buildings.—A practical course in the planning of farm structures, estimating quantities of material required, and costs. *One shop credit per week, second term. Required of Short-Course students in Agriculture, second year.*

I. Shopwork.—Woodworking at the bench and lathe. *One and one-half shop credits per week, first term. Required of Short-Course students in Agriculture, second year.*

## Zoölogy.

PROFESSOR BARLOW.

The work in this department is designed to meet the needs of two classes of students, those who are interested in the economic aspect of animal life and those who purpose to become teachers. To meet the needs of the first class, subjects are given which are planned to call attention to the economic importance of the different orders. Much time is allotted to entomology, and in this subject special attention is given to injurious species. For those who are to be teachers, a thorough training is given in the morphology and classification of animals as a preparation for the more special subjects that follow. In these, attention is directed to the habits and relations of animals, which are studied both in the field and laboratory.

The laboratory is equipped with a series of charts, valuable models, and many mounted skeletons. The Rhode Island birds are represented by mounted specimens of practically every species; fishes, reptiles, and batrachians, by alcoholic preparations. The collection of insects, begun recently, now fills about one hundred cases, and is being steadily increased. Each student is given the use of compound and dissecting microscopes. The necessary instruments for laboratory work can be procured at small cost at the college store.

### Subjects.

I. General Zoölogy.—Discussion of the more important laws of biology and the dissection of representatives of the more important Phyla. *Two laboratory and two recitation credits per week, first term. Required of Sophomores in Agriculture, Home Economics, and Applied Science.*

II. General Zoölogy.—Special attention is given to the relation of animals to their surroundings. *Two laboratory credits and one recitation credit per week, second term. Option for Seniors in Applied Science.*

III. Physiology.—The physiology of the higher mammals. *One laboratory and three recitation credits per week, second term. Required of Sophomores in Agriculture, Home Economics, and Applied Science.*

IV. Economic Entomology. — *One laboratory and three recitation credits per week, second term. Required of Juniors in Agriculture. Option in Applied Science.*

V. General Entomology.—*Two laboratory credits and one recitation credit per week, first term; two recitation and three laboratory credits per week, second term. Option for Seniors in Applied Science.*

VI. Systematic Entomology.—*Three or five laboratory credits per week, throughout the year. Elective for those who are taking or have taken Zoölogy V.*

VII. Vertebrate Anatomy.—*Two laboratory credits and one recitation credit per week, first term. Required of Juniors in Home Economics. Option for Juniors in Applied Science.*

VIII. Histology and Embryology.—*Three laboratory and two recitation credits per week, second term. Required of Juniors in Home Economics. Option for Juniors in Applied Science.*

IX. Methods in Nature Study.—*Bird life, habits of insects, aquaria. One and one-half laboratory or field credits per week, second term. Elective.*

A. Elementary Zoölogy.—*Deals with forms of economic importance. Three recitation and one and one-half laboratory credits per week, first term. Required of Short-Course students in Agriculture and Domestic Science, first year.*

## Organizations.

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### Athletic Association.

JAMES F. NUGENT.....	President.
WILLIAM HENRY TULLY.....	Vice-President.
JOHN BARLOW.....	Secretary-Treasurer.

### Agricultural Club.

HOWARD ALBERT SAFFORD.....	President.
PATRICK JOSEPH HEALY.....	Vice-President.
JONATHAN FARNUM COMSTOCK.....	Secretary.
WALTER COLWELL IRONS.....	Treasurer.

### Debating Club.

WILLIAM THOMAS NEAL.....	President.
CARLE M. BIGELOW.....	Vice-President.
PATRICK J. HEALY.....	Secretary-Treasurer.

### Engineering Society.

CHARLES E. ANGILLY.....	President.
JAMES F. NUGENT.....	Vice-President.
CHESTER B. HADLEY.....	Secretary-Treasurer.

### Literary Society.

HAROLD W. BROWNING.....	President.
CEDRIC H. COLLINS.....	Vice-President.
EARL CLIFTON WEBSTER.....	Secretary.
ALEXANDER D. MACLELLAN.....	Treasurer.

### Science Club.

ROYAL LINFIELD WALES, B. S.....	President.
JOHN BARLOW, A. M.....	Vice-President.
ROBERT A. LICHTENTHAELER.....	Secretary.



### Student Council.

CHARLES E. ANGILLY.....	President.
PHILIP H. CLARK.....	Vice-President.
RALPH I. ALEXANDER.....	Secretary-Treasurer.

### Young Men's Christian Association.

HARRY BENJAMIN ALBRO.....	President.
CHARLES H. LARKIN.....	Vice-President.
RUDOLF W. RUPRECHT.....	Secretary.
WALTER C. IRONS.....	Treasurer.

### Young Women's Christian Union.

ANNIE ELIZA KENYON.....	President.
DOROTHY BULLOCK.....	Vice-President.
SARA IOLA WILSON.....	Secretary.
MARION BORDEN.....	Treasurer.

### Dramatic Club.

RUDOLF W. RUPRECHT.....	President.
SARA IOLA WILSON.....	Vice-President.
EARL A. TYLER.....	Secretary-Treasurer.

### Rifle Club.

BURTON K. HARRIS.....	President.
DAVID E. WARNER.....	Captain.
PATRICK J. HEALY.....	Secretary.
JAMES F. NUGENT.....	Treasurer.

### Lecture Association.

R. W. RUPRECHT.....	President.
ALLAE C. SLATER.....	Vice-President.
L. P. DICKINSON, B. S.....	Treasurer.
PHILIP H. CLARK.....	Assistant Treasurer.

## Alumni Association.

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CHAPIN TRAFFORD ARNOLD, 1894.....President.

Providence, R. I.

EDITH CECELIA KEEFER, 1903.....Vice-President.

New York.

JOHN RALEIGH ELDRED, 1900.....Secretary-Treasurer.

Kingston, R. I.

### *Executive Committee.*

C. T. ARNOLD, 1894

JOHN R. ELDRED, 1900.

EDITH C. KEEFER, 1903,

LEROY L. MOUNCE, 1910.

H. R. TISDALE, 1909.

## Students.

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### Graduates.

Amison, Elizabeth Ellen (B. S., Simmons College, '09) Bacteriology..	Kingston.
Cobb, George Robert (B. S., Mass. Agr. College '08) Horticulture and Zoölogy.....	Kingston.
Hammett, Frederick Simons (B. S., Tufts College '08) Chemistry and Botany.....	Kingston.

### Seniors.

Andrews, Carmen Nichols, Appl. Sci.....	Slocum.
Angilly, Charles Enoch, Jr., Civ. Eng.....	Providence.
Caldwell, Dorothy Walcott, Civ. Eng.....	Woonsocket.
Easterbrooks, Harold Arnold, Appl. Sci.....	Providence.
Easterbrooks, Louis Church, Agr.....	Providence.
Edwards, Clarence Bland, Agr.....	Kingston.
Gilchrest, Clyde Ronald, Elec. Eng.....	Leominster, Mass.
Harris, Burton Kenneth, Chem. Eng.....	Lime Rock.
Healy, Patrick Joseph, Agr.....	Newport.
Kent, Robert Willard, Mech. Eng.....	Woonsocket.
Kenyon, Annie Eliza, Appl. Sci.....	Usquepaug.
Minor, Arthur Jacob, Civ. Eng.....	Kingston.
Neal, William Thomas, Agr.....	Pittsfield, Mass.
Robinson, Benjamin Rowland, Mech. Eng.....	Bedford Station, N. Y.
Ruprecht, Rudolf William, Appl. Sci.....	New York, N. Y.
Safford, Howard Albert, Agr.....	Providence.
Tucker, Harriet Taber, Appl. Sci.....	West Kingston.
Wade, Ceylon Raymond, Civ. Eng.....	Bridgeton.
Warner, David Edmond, Jr., Agr.....	Bridgeton.

### Juniors.

Albro, Harry Benjamin, Elec. Eng.....	Pontiac.
Barlow, Henry Newell, Elec. Eng.....	Wassaic, N. Y.
Bigelow, Carle Muzzy, Appl. Sci.....	Woonsocket.
Briden, Frank Harold, Mech. Eng.....	Central Falls.
Clark, Philip Harrison, Elec. Eng.....	Centreville.
Cobb, Electra Henrietta, Home Econ.....	Howardville, Va.
Comber, Edward Anthony, Elec. Eng.....	Narragansett Pier.

Davis, Edgar George, Civ. Eng.....	Providence.
Doll, Walter, Mech. Eng.....	Pawtucket.
Henderson, Ethel Pierce, Appl. Sci.....	Westerly.
Johnson, Charles Varnum, Civ. Eng.....	Allenton.
Larkin, Charles Herbert, Civ. Eng.....	Ashaway.
Nutting, Bertha May, Home Econ.....	Brickerville, Pa.
Patterson, Arthur John, Elec. Eng.....	Buffalo, N. Y.
Richmond, Fred Allen, Elec. Eng.....	Hope Valley.
Sherman, George William, Jr., Elec. Eng.....	Lafayette.
Slater, Allae Cordelia, Home Econ.....	Slocums.
Steck, Frank, Chem. Eng.....	Newark, N. J.
Sullivan, John Leo, Elec. Eng.....	Lonsdale.
Webster, Samuel C., Jr., Agr.....	Westerly.

### Sophomores.

Ahrens, Bernard Alexander, Agr.....	Elmhurst, Long Island, N. Y.
Alexander, Ralph Irwin, Mech. Eng.....	Baldwinville, Mass.
Baldwin, George Holland, Elec. Eng.....	Valley Falls.
Bates, Reuben Charles, Civ. Eng.....	Longmeadow.
Borden, Marion Wilhelmina, Home Econ.....	Providence.
Brooks, John Charles, Elec. Eng.....	Ashton.
Champlin, Charles Edwin, Elec. Eng.....	Westerly.
Cohen, Benjamin, Elec. Eng.....	New Bedford, Mass.
Comstock, Jonathan Farnum, Agr.....	Cranston.
Congdon, Esther Loomis, Home Econ.....	Wakefield.
Corr, William John, Chem. Eng.....	East Greenwich.
Elkins, Dorothy Dearborn, Home Econ.....	Amesbury, Mass.
Elkins, Marguerite White, Home Econ.....	Amesbury, Mass.
Ford, Alice Edith, Agr.....	North Easton, Mass.
Freeman, Philip Edwards, Eng.....	Stony Creek, Va.
Goodchild, Charles Isaac, Mech. Eng.....	Providence.
Hart, Crawford Peckham, Agr.....	Newport.
Hauxhurst, Harold Williams, Elec. Eng.....	Providence.
Hopkins, Raymond Canfield, Eng.....	Shannock.
Howes, James Ellis, Agr.....	Dennis, Mass.
Irons, Walter Colwell, Agr.....	North Scituate.
Kelley, Levi Martin, Civ. Eng.....	Cranston.
Noyes, Edwin Roy, Elec. Eng.....	East Greenwich.
Porter, William James, Elec. Eng.....	Valley Falls.
Potter, Charles Thornton, Agr.....	Natick.
Redding, William Francis, Civ. Eng.....	Meshanticut.
Reiner, Waldo, Civ. Eng.....	Brooklyn, N. Y.
Reynolds, Arthur Leslie, Elec. Eng.....	Providence.
Slocum, George Edwin, Elec. Eng.....	Providence.
Stedman, Oliver Hazard, Mech. Eng.....	Peace Dale.
Swift, Paul Gammons, Mech. Eng.....	West Falmouth, Mass.
Tully, William Henry, Appl. Sci.....	Peace Dale.

Turner, Walter Raymond, Appl. Sci.	Johnston.
Webb, William Henry, Elec. Eng.	Cranston.
Wilcox, Erroll Kenyon, Eng.	Westerly.
Wood, Susie Stanton, Home Econ.	Slocums.
Young, James Hannibal, Appl. Sci.	Brooklyn, N. Y.

### Freshmen.

Aldred, James Hilton, Mech. Eng.	Ashton.
Anderson, Edwin, Mech. Eng.	Newport.
Anderson, William Edward, Agr.	Westerly.
Arnold, Louis Whitman, Appl. Sci.	Westerly.
Aspinwall, Frederick Otto, Chem. Eng.	Pawtucket.
Babcock, Edwin States, Elec. Eng.	East Greenwich.
Barry, Dennis Francis, Appl. Sci.	Warren, Mass.
Baxter, Frank Howard, Civ. Eng.	Sharon, Mass.
Benson, Robert John, Elec. Eng.	Brockton, Mass.
Black, Theodore Edgar, Agr.	Westerly.
Boulester, Edward James, Appl. Sci.	Providence.
Brechin, John, Jr., Eng.	Bristol.
Brown, Herman Byron, Appl. Sci.	Hope Valley.
Browning, Harold William, Appl. Sci.	Matunuck.
Burdick, John Hare Powell, Jr., Eng.	Wickford.
Carberry, Thomas, Eng.	Providence.
Casey, John, Mech. Eng.	Newport.
Clarke, Charles Browning, Civ. Eng.	Wakefield.
Clarke, Henry Marsh, Civ. Eng.	Westerly.
Collins, Cedric Hamlin, Civ. Eng.	Berkeley.
Connor, Thomas Rowley, Elec. Eng.	Peace Dale.
Davis, Henry Ellis, Agr.	Providence.
Esty, James Russell, Elec. Eng.	Slatersville.
Finch, Myron Whitmarsh, Agr.	Providence.
Ford, Helen Wheeler, Home Econ.	North Easton, Mass.
Glynn, John Charles, Eng.	New London, Conn.
Hartwell, Gladys, Home Econ.	Kingston.
Hawkins, Myron Angell, Agr.	Providence.
Huling, Frederick Harris, Eng.	Central Falls.
Huntley, Herbert George, Eng.	New London, Conn.
Jones, Carlton Walter, Civ. Eng.	Providence.
Karmann, Herman Harry, Civ. Eng.	Providence.
Kinney, Lorenzo Foster, Jr., Appl. Sci.	Kingston.
Knowles, Chester Lewis, Appl. Sci.	Point Judith.
MacLellan, Alexander Davies, Civ. Eng.	Newport.
Matthews, Wilfred Chipman, Elec. Eng.	Providence.
May, Cyril Mercer, Mech. Eng.	East Greenwich.
Meears, Etta Elizabeth, Home Econ.	Kingston.
Nathanson, Joseph George, Elec. Eng.	Central Falls.
Newton, Leroy Burgess, Eng.	West Barrington.



Nicholson, Olive, Appl. Sci.	Pawtucket.
Nicholson, Sarah Alice, Home Econ.	Pawtucket.
Oslin, William Henry, Chem. Eng.	Providence.
Pember, Howard Stephen, Eng.	Westerly.
Pollard, Raymond George, Mech. Eng.	Valley Falls.
Price, Milton Harris, Agr.	Providence.
Reiner, Frieda, Home Econ.	Brooklyn, N. Y.
Reiner, Herbert, Agr.	Brooklyn, N. Y.
Rollins, John Frank, Mech. Eng.	New London, Conn.
Rossi, Louis, Civ. Eng.	Westerly.
Safford, Edith Marie, Home Econ.	Lancaster, Mass.
Shea, Joseph Francis, Elec. Eng.	Valley Falls.
Sherwin, LeRoy Merton, Mech. Eng.	Pittsfield, Mass.
Spargo, Thomas John, Appl. Sci.	Westerly.
Thayer, Harold Francis, Appl. Sci.	Woonsocket.
Thornley, Albert Lewis, Appl. Sci.	Pawtucket.
Tucker, Myron Griffin, Eng.	Wakefield.
Turner, Harvey Robert, Civ. Eng.	Providence.
Watson, Adelaide Gilbert, Home Econ.	Peace Dale.
Webster, Earl Clifton, Eng.	Providence.
Whittaker, LeRoy Allen, Elec. Eng.	Central Falls.
Winslow, Lorrimer Alton, Elec. Eng.	Valley Falls.
Young, Edwin Olney, Elec. Eng.	East Greenwich.

### Irregular in Classification.

Bullock, Dorothy Jennette, Home Econ.	Pawtucket.
Croucher, Elizabeth, Home Econ.	Newport.
Diaz, George Soler, Elec. Eng.	Havana, Cuba.
Gillette, Mary Adelaide, Home Econ.	Providence.
Gillette, Sarah Elizabeth, Home Econ.	Providence.
Goddard, Archie Coggeshall, Agr.	Newport.
Hadley, Chester Brown, Mech. Eng.	Woonsocket.
Henderson, Samuel James, Eng.	Hingham Centre, Mass.
Kimball, Rhoda Evelyn, Agr.	South Dartmouth, Mass.
Mason, Howard, Eng.	Pawtucket.
Matteson, Wayne Thurman, Civ. Eng.	Block Island.
Mounce, Harry Lyden, Agr.	North Marshfield, Mass.
Nugent, James Francis, Eng.	Providence.
Phillips, Fred Sheldon.	Lafayette.
Pritchard, David, Agr.	Auburn.
Robinson, Eben George, Agr.	Edgewood.
Slavin, Matthias, Mech. Eng.	New Bedford, Mass.
Tyler, Earl Albert, Appl. Sci.	Centreville.
Whalen, William Joseph, Appl. Sci.	Providence.
White, Fred Pierce, Chem.	Pawtucket.

## Two-Year Courses.

Blackler, Edwin Alston, Mech. Arts.....	Westerly.
Brindle, Robert, Jr., Mech. Arts.....	Woonsocket.
Caldwell, Frederick Wyllys, Mech. Arts.....	Woonsocket.
Clapp, Harry Edwin, Mech. Arts.....	Westerly.
Dolloff, Vincent Arthur, Agr.....	Providence.
Girard, Alphonse Herbert, Mech. Arts.....	Woonsocket.
Halliday, Robert Crossley, Agr.....	Pawtucket.
Harding, Ada LaPlace, Dom. Sci.....	Lyme, Conn.
Harris, Meyer Isidor, Agr.....	New York, N. Y.
Herreshoff, Lewis Francis, Agr.....	Bristol.
Hossie, Harry Bailey, Agr.....	Quonochontaug.
Kyle, Thomas, Agr.....	Central Falls.
Lambert, Leroy Leigh, Agr.....	Apponaug.
O'Keefe, John Andrew, Jr., Mech. Arts.....	Providence.
Quintero, Carlos, Agr.....	Panama, Panama.
Smith, Henry James, Agr.....	Ansonia, Conn.
Stowell, Leo Merrill, Agr.....	Hatfield, Mass.
Tefft, Helen Macy, Dom. Sci.....	Jamestown.
Tefft, Lucy Catherine, Agr.....	Jamestown.
Webb, George Henry, Agr.....	Pawtucket.
Wilson, Sara Iola, Dom. Sci.....	Westerly.

## Poultry-Keeping.

Allen, H. F.....	Northboro, Mass.
Allen, Howard W.....	Providence.
Allen, Ruth Linda.....	Providence.
Anderson, David.....	Melrose Highlands, Mass.
Anderson, William A.....	Melrose Highlands, Mass.
Anderson, William.....	Newport.
Auerbach, Meyer.....	New York City.
Goodechild, William C.....	Providence.
Gross, Andre.....	Saylesville.
Hastings, Charles Byron.....	Providence.
Heaton, George B.....	South Boston, Mass.
Hemenway, Rodney F.....	Lowell, Mass.
Hiestand, William H.....	Pottstown, Pa.
Leuba, Fernand Henri.....	Coventry.
Lyford, Sylvanus Cook.....	Claremont, H. N.
MacMurtry, Friend A.....	Littleton, Mass.
Magill, William I.....	Hoboken, N. J.
Manchester, Philip.....	Middlebury, Vt.
Monks, Esther Annie.....	South Milford, Mass.
Mugan, Dennis A.....	Providence.
Murray, H. M.....	Newnan, Georgia.
Paine, Marcia Woodworth.....	Barnstable, Mass.

Pelletier, Walter Albert.....	Marlboro, N. H.
Peters, George Albert.....	New Bedford, Mass.
Storms, Charles C.....	Providence.
Sugiyama, Tauzabro.....	Brooklyn, N. Y.
Trafton, Mary Adelaide.....	Fall River, Mass.
Youshie, Tey.....	New York, N. Y.

### Summer School.

Allen, Eliza.....	Peace Dale.
Arnold, Marion W.....	West Greenwich Center.
Austin, John H.....	Westerly.
Austin, Jennie.....	Westerly.
Brown, Amey.....	Auburn.
Cawley, Katherine L.....	East Providence.
Cawley, Anna G.....	East Providence.
Clark, Gertrude M.....	Providence.
Collins, Reba J.....	West Kingston.
Coyne, Grace M.....	Providence.
Crocker, Hannah M.....	Providence.
Crocker Nellie F.....	Providence.
Dawley, Jennie A.....	Westerly.
Dubois, A. Alice C.....	Edgewood.
Dubois, Gladys H. Church.....	Edgewood.
Ford, James.....	Cambridge, Mass.
French, Isabel C.....	Wakefield.
French, Mahala W.....	Pawtucket.
Groff, Susanna S.....	Peace Dale.
Hawkins, Marguerite.....	Hope Valley.
Hurley, Katherine M.....	Providence.
Hurley, Lila.....	Providence.
Lyons, Mary.....	Peace Dale.
MacMahon, Susie.....	Westerly.
Martin, Mrs. E. J.....	Westerly.
Martin, Lizzie E.....	Westerly.
Murphy, Edward T.....	Newport.
Northrup, May M.....	Wickford.
Noyes, Edwin A.....	East Greenwich.
Palmer, Ruth C.....	West Kingston.
Robinson, Anna D.....	Wakefield.
Salisbury, LeRoy A.....	Hope.
Sherman, Ruth E.....	Peace Dale.
Steere, Deborah W.....	Mapleville.
Tucker, Ellen Capron.....	Kingston.
Tucker, Ethel Aldrich.....	Kingston.
Whaley, Clara P.....	Wakefield.
Waters, Susan R.....	Providence.
Wilber, Sarah M.....	West Kingston.

Graduate students.....	3
Seniors.....	19
Juniors.....	20
Sophomores.....	37
Freshmen.....	63
Irregulars.....	20
Two-Year Courses.....	21
Poultry Students.....	28
Summer School.....	39
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Total number of students (none counted twice).....	250

## Graduates.\*

1894.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ADAMS, GEORGE EDWARD . . . Kingston.	Agr.	Chief of Dept. of Agriculture and Professor of Agronomy, R.I.S.C.
AMMONDS, GEORGE CLARENCE . . . 5 Boylston Place, Boston, Mass.	Mech.	Railroad Postal Clerk, on N. Y., N. H. & H. R. R.
ARNOLD, CHAPIN TRAFFORD . . . 61 Thurston St., Providence.	Agr.	Electrical Contractor, Office 26 Custom House St., Providence.
BURLINGAME, GEO. WASHINGTON . . R. F. D. No. 2, Box 56, North Scituate.	Agr.	Farmer.
CLARK, HELEN MAY (MRS. WM. F. B. LEAVITT), B. L., Smith College 1899. Essex Fells, New Jersey.		At home.
KNOWLES, JOHN FRANKLIN . . . Kingston.....	Mech.	With Contractor John Bristow.
†MADISON, WARREN BROWN . . .	Agri.	
MATHEWSON, ERNEST HOXSIE . . . Ph. B., Brown University, 1896. 1486 Meridian Place, Washington, D. C.	Mech.	Crop Technologist in Tobacco, U. S. Department of Agriculture.
PECKHAM, REUBEN WALLACE . . . Melville Station, Newport . . .	Agr.	Market Gardener.
RATHBUN, WILLIAM SHERMAN . . . Northampton, Mass.	Agr.	With Printing Department, Eureka Ruling and Binding Co., Holy- oke, Mass.
RODMAN, GEORGE ALBERT . . . New Haven, Conn.	Mech.	Building Dept., Room 24, General Office Bldg., N. Y., N. H. & H. R. R. Co.
SARGENT, CHARLES LAWRENCE . . Ph. D., University of Pennsylvania, 1900. 9 Thomas St., Newark, New Jersey.	Agr.	Chemist, Murphy Varnish Co.
SLOCUM, SAMUEL WATSON . . . 130 West Broad St., Westerly.	Agr.	Carpenter.
SPEARS, JOHN BARDEN . . . Foster Centre.	Agr.	Farmer.

\* It is earnestly desired that graduates inform the college office of any permanent change of address.

† Deceased.



NAME AND ADDRESS.	COURSE.	OCCUPATION.
SWEET, STEPHEN ADELBERT . . . Slocums.	Agr.	Farmer.
TUCKER, GEORGE MASON . . . Ph. D., Göttingen, 1899.	Agr.	In charge of agricultural work on estate, Bluefields, Nicaragua.
WILBER, ROBERT ARTHUR . . . East Greenwich.	Mech.	Express Agent.

## 1895.

ALBRO, LESTER FRANKLIN . . . Melville Station, Newport.	Agr.	Professional Singer.
BURDICK, HOWLAND . . . . . Kingston.	Agr.	Instructor in Dairying, R. I. S. C.
CLARKE, CHARLES SHERMAN . . . Jamestown.	Mech.	Marine Engineer.
ELDRED, MABEL DEWITT . . . . Kingston.		Instructor in Drawing, R. I. S. C.
HAMMOND, JOHN EDWARD . . . . Jamestown.	Agr.	Farmer.
OATLEY, LINCOLN NATHAN . . . . Wakefield.	Mech.	Contractor and Builder; Coal Dealer.
SCOTT, ARTHUR CURTIS . . . . . Ph. D., Univ. of Wisconsin, 1902. Austin, Texas.	Mech.	Professor of Electrical Engineer- ing, Consulting Engineer, Univ. of Texas.
TEFFT, JESSE COTTRELL . . . . . Jamestown.	Mech.	Purser, Newport and Jamestown Ferryboat Co.
WINSOR, BYRON EDGAR . . . . . Coventry.	Mech.	Poultryman.

## 1896.

BROWN, MAY (MRS. CHARLES A. WHITE). Narragansett Pier.		At home.
GREENMAN, ADELAIDE MARIA (MRS. R. WALLACE PECKHAM) . . . Melville Station, Newport.		At home.
KENYON, ALBERT LEWIS . . . . . 35 Chestnut St., South Manchester, Conn.	Mech.	Farmer.
MOORE, NATHAN LEWIS CASS . . . . Venice, Florida.	Agr.	Fruit-Grower, citron culture.
TABOR, EDGAR FRANCIS . . . . . 69 Doyle Ave., Providence.	Mech.	Calico Printer, U. S. Finishing Co., Silver Spring Branch.
*WILLIAMS, JAMES EMERSON . . . .	Agr.	

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\*Deceased.

## 1897.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CARMICHAEL, WELCOME SANDS . . Shannock.	Sci.	Bookkeeper, Providence Journal Co., Providence.
CASE, HERBERT EDWARDS BROWN . Ph. B., Brown University, 1900. Graduate, Hartford Theological Seminary, 1904.	Mech.	Assistant Secretary, Foreign Department, Amer. Board of Commissioners for Foreign Missions, 14 Beacon St., Boston, Mass.
GRINNELL, ARCHIE FRANKLIN . . Southbridge, Mass.	Mech.	Head Designer, American Optical Co.
HANSON, GERTRUDE MAIE . . . Kingston.	Sci.	Teacher.
HOXSIE, BESSIE BAILEY (Mrs. E. F. RUECKERT) . . . 98 Melrose St., Providence.	Sci.	At home.
KENYON, ALBERT PRENTICE . . 10 West St., Westerly.	Mech.	Bookkeeper, Maxson & Co., Westerly.
KENYON, CHARLES FRANKLIN . . Shannock.	Mech.	Stationary Engineer, Boston, Mass.
LARKIN, JESSIE LOUISE . . . . 98 Beach St., Westerly.	Sci.	Genealogist.
MARSLAND, LOUIS HERBERT, . . Provemont, Michigan.	Mech.	Farmer and Fruit Grower.
TEFFT, ELIZA ALICE . . . . 1 Stanton St., Westerly.	Sci.	Teacher, East Greenwich.
THOMAS, IRVING . . . . . 2633 West Sterner St., Philadelphia, Pa.	Mech.	Designer of Patterns.

## 1898.

ARNOLD, SARAH ESTELLE (Mrs. R. O. BROOKS) . . . 975 East 18th St., Brooklyn, N. Y.	Sci.	At home.
BARBER, GEORGE WASHINGTON . . Lakewood.	Agr.	Agent, Metropolitan Life Insurance Co.
CARGILL, EDNA MARIA (Mrs. LESTER H. BROWN) . . 4 Highland Ave., Lonsdale.	Sci.	At home.
CASE, JOHN PETER . . . . . 26 Cortland St., New York City.	Agr.	With Brown Hoisting Machinery Company.
CLARK, WILLIAM CASE . . . . Wakefield.	Sci.	Secretary and Gen. Mgr. Sea-View Railroad Co. and Narragansett Pier Elec. Light and Power Co.; Mgr. Wickford Light and Water Co.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CONGDON, HENRY AUGUSTUS . . . Kingston.	Mech.	Farmer.
FLAGG, MARTHA REBECCA . . . Hardwick, Mass	Sci.	At home.
HARLEY, WILLIAM FERGUSON . . . 62 Hillside Ave., Providence.	Agr.	Salesman, with Messrs. Callender, McAuslan & Troup, Providence.
TURNER, HARRIETTE FLORENCE (MRS. GEO. M. TUCKER) . . .	Sci.	At home, Bluefields, Nicaragua.
Graduate, Drexel Institute, 1900.		
WILSON, GRACE ELLEN (MRS. W. F. HARLEY) . . .	Sci.	At home.
62 Hillside Ave., Providence.		

## 1899.

BOSWORTH, ALFRED WILLSON . . . Geneva, N. Y.	Sci.	Associate Chemist, N. Y. Agr. Exp. Sta.
BROOKS, RALPH ORDWAY . . . 975 East 18th St., Brooklyn, N. Y.	Sci.	Consulting Chemist, Bacteriologist, Microscopist, Food-Inspection Expert, 191 Franklin St., New York City.
GEORGE, LILLIAN MABELLE . . . A. B. Univ. Ill., 1904. Graduate, N. Y. State Library School, 1910. 1104 L. St., N. W. Washington, D. C.	Sci.	Scientific Assistant, Library of U. S. Dept. of Agriculture.
HARVEY, MILDRED WAYNE . . . 33 Wall St., New York City	Sci.	Private Secretary, Mechanics and Metals National Bank.
KENYON, BLYDON ELLERY . . . Austin, Texas.	Agr.	Instructor, School of Electrical Engineering, Univ. of Texas.
KNOWLES, CARROLL . . . 127 Hamilton St., Providence..	Mech.	Tool Designer, Brown & Sharpe Mfg. Co.
KNOWLES, HARRY . . . Ph. B., Brown University, 1906. 1182 Broad St., Newark, N. J.	Sci.	Reporter, Newark Sunday Call.
LADD, MERRILL AUGUSTUS . . . Empire Building, Atlanta, Ga.	Mech.	Sales Agent, Supply Dept., General Electric Co.
MORRISON, CLIFFORD BREWSTER . . . 543 Broad St., Providence.	Sci.	Chemist.
OWEN, WILLIAM FRAZIER . . . Schenectady, N. Y.	Mech.	Engineering Dept., General Electric Co.
PAYNE, EBENEZER . . . M. D., Univ. Michigan, 1904. Glendora, California.	Sci.	Orange Grower.

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*SHERMAN, GEORGE ALBERT . .	Mech.	
THOMPSON, SALLY RODMAN } (MRS. LEWIS BALCH, JR.) . .	Sci.	At home.
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BRIGHTMAN, HENRY MAXSON . .	Mech.	Heating and Ventilating Engineer with B. F. Sturtevant Co.
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BRAYTON, CHARLES ANDREW . . Hope, R. F. D.	Agr.	Farmer.
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DENICO, ARTHUR ALBERTUS . . . 40 Park Ave., Bloomfield, N. J.	Sci.	With American Telephone and Telegraph Co., Traffic Dept.
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SHERMAN, ANNA BROWN . . . . 49 Roger Williams Ave., Providence	Sci.	Publisher.
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STEERE, ROENA HOXSIE . . . . 98 Fifiold St. Providence.	Sci.	Stenographer, with Anthony & Cowell Co.
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## 1902.

CLARKE, LATHAM . . . . . A. M., Brown University, 1903. Ph. D., Harvard University, 1905. Boylston Hall, Cambridge, Mass.	.Chem.	Instructor in Chemistry, Har- vard University.
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NAME AND ADDRESS.	COURSE.	OCCUPATION.
FERRY, OLIVER NEEDHAM . . . 8 Armingtton Ave., Providence.	Mech.	In charge of Production Dept., Maxwell-Briscoe Mfg. Co.
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## 1903.

BARBER, KATE GRACE . . . Ph. D., Yale University, 1906. 1104 L. St., N. W., Washington, D. C.	Gen. Sci.	Micro-analyst, Bureau of Chem- istry, U. S. Department of Agri- culture.
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## 1907.

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## 1908.

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## 1909.

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MOYER, LOUIS EARL . . . . Seneca Falls, N. Y.	Civ. Eng.	Dept. State Engineer, Barge Canal Office.
ROCKWELL, RUBY BELLE . . . . North Bennington, Vermont.	Chem.	Teacher of Science, High School.
SMITH, ELMER FRANCIS . . . . Essex Fells, New Jersey.	El. Eng.	Instructor in Mathematics and Science, and Athletic Coach, Kingsley School.
TISDALE, HARRY ROBERT . . . . Box 263, New London, Conn.	Chem.	Student, Mass. Institute of Technology, 20 St. James Ave., Boston.
TUCKER, ELLEN CAPRON . . . . Kingston.	Gen. Sci.	Teacher, West Kingston.

## 1910.

BURGESS, PAUL STEERE . . . . 310 E. Green St., Champaign, Ill.	Chem. Eng.	Graduate student, University of Illinois.
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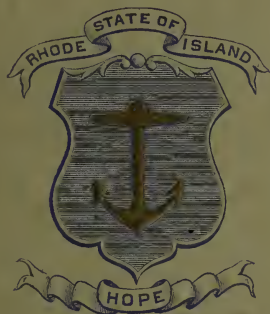


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VOL. VIII. NO. 1.

FOR MAY, 1912.

## CATALOGUE OF THE COLLEGE.



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REPORT OF BOARD OF MANAGERS--PART III.

KINGSTON, R. I.

1912.

PUBLISHED QUARTERLY BY THE COLLEGE

MAY, AUGUST, NOVEMBER, FEBRUARY.

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TWENTY-FOURTH ANNUAL REPORT  
OF THE  
BOARD OF MANAGERS  
OF  
RHODE ISLAND STATE COLLEGE,

MADE TO THE  
General Assembly at the January Session, 1912.

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PART III—CATALOGUE.

Part I—General Report—printed under separate cover.

• Part II—Experiment-Station Report—printed under separate cover.

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Providence, R. I.  
E. L. Freeman Company, State Printers.  
1912.





# Rhode Island State College.

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HON. PHILIP A. MONEY.....	MEMBER OF STATE BOARD OF AGRICULTURE.

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## Officers of the Corporation.

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## Report.

---

*To His Excellency Aram J. Pothier, Governor, and the Honorable General Assembly of the State of Rhode Island and Providence Plantations, at the January Session, 1912:*

I have the honor to submit herewith Part Three of the Twenty-Fourth Annual Report of the Board of Managers of Rhode Island State College, as required by law.

CHARLES DEAN KIMBALL,

*President of the Board of Managers of Rhode Island State College.*

## Faculty and Other Officers.

---

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\*Relieved, December 31, 1911.

†Detailed, January 1, 1912.

†† Resigned, to take effect September 1, 1912.

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FREDERICK JOSEPH GODIN,

*Instructor in Horticulture.*

LUCY COMINS TUCKER,

*Registrar and Secretary to the President.*

ALICE ELIZABETH BEALE,

*Bursar.*

JENNIE CRANDALL THOMPSON,

*Bookkeeper*

GERTRUDE MABEL BURDICK,

*Bookkeeper.*



## Lectures.

### Poultry Course.

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E. W. Brown, Old Mystic, Conn., MARKETING POULTRY PRODUCTS. BREEDS.  
Two lectures.

F. L. Sewall, Niles, Mich., STANDARD TYPES. Two lectures. Illustrated.

John H. Robinson, Boston, Mass., PERMANENT POULTRY KEEPING. ILLUSTRATED. FEEDING. HOUSING. Three lectures.

Henry D. Smith, Rockland, Mass., CAPONS AND CAPONIZING. Two lectures and demonstration.

Samuel Knowles, Lexington, Mass., POULTRY KEEPING AS AN AVOCATION.

E. Collins Tefft, Wakefield, R. I., POULTRY AND FRUIT CULTURE. Two lectures.

Thomas F. Dexter, Providence, R. I., MATING AND BREEDING LEGHORNS.

Carroll H. Magoon, Kingston, R. I., THE CHICKEN DIARRHEAS.

George A. Peters, Shirley, Mass., FEEDING LAYING HENS. INCUBATION. BROODING. Three lectures.

Alfred R. Lee, Washington, D. C., FATTENING POULTRY. PACKING HOUSE METHODS OF HANDLING POULTRY AND EGGS. Two lectures.

George V. Smith, West Willington, Conn., POULTRY AS A FARM CROP.

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### Farmers' Week.

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C. D. Jarvis, Agricultural Experiment Station, Storrs, Conn., RENOVATION OF OLD APPLE ORCHARDS.

F. H. Stadtmueller, Elmwood, Conn., FARM ACCOUNTS.

H. W. Collingwood, New York, N. Y., THE AGRICULTURAL PRESS.

## Experiment-Station Staff.

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HOWARD EDWARDS, M. A., LL. D. ....	}	President of the College. <i>Ex-officio</i> Member.
H. J. WHEELER, Ph. D., Sc. D. ....		Director; Agronomy.
BURT L. HARTWELL, Ph. D.* .....		Chemistry.
GEORGE E. ADAMS, B. S. ....		Horticulture.
PHILIP B. HADLEY, Ph. D. ....		Biology.
S. C. DAMON, B. S. ....		Assistant, Agronomy.
JOHN E. SEABRIGHT, B. A. ....		Assistant, Chemistry.
L. F. WHIPPLE. ....		Assistant, Chemistry.
FREDERICK S. HAMMETT, A. B., M. Sc. ....		Assistant, Chemistry.
ROBERT A. LICHTENTHAELER, M. S. ....		Assistant, Chemistry.
F. R. PEMBER, M. S. ....		Assistant, Plant Physiology.
F. J. GODIN. ....		Assistant, Floriculture.
CARROLL H. MAGOON. ....		Poultryman.
NATHANIEL HELME. ....		Meteorology.
E. ELIZABETH MEEARS. ....		Stenographer and Librarian.
ELEANOR E. GOULD. ....		Stenographer.
EVA BARNS, A. B. ....		Stenographer and Accountant.
M. ALICE KIMBALL. ....		Stenographer.
DOROTHY WALCOTT CALDWELL. ....		Assistant, Biology.

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*The publications of the Station will be mailed free, upon request, to residents of Rhode Island. Suggestions as to how the station can aid the state are gladly received. Visitors are always welcome. Railway station, telegraph, express, and post-office—Kingston, Rhode Island. Long distance telephone, Narragansett Pier Exchange.*

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\*In charge of experiments in plant physiology and animal feeding.

## College Calendar.

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Tuesday, September 17, 1912.....	Chapel Exercises, 8:20 A. M.
Registration, examination of entering and conditioned students, 9:00 A. M.	
Wednesday, September 18.....	Recitations begin, 8:20 A. M.
Saturday, October 12.....	Columbus Day.
Tuesday, November 5.....	Election Day.
Wednesday, November 27, 12:00 M. {	Thanksgiving Recess.
Monday, December 2, 8:20 A. M. }	
Friday, December 20, 4:35 P. M. {	Christmas Recess.
Thursday, January 2, 1913, 8:20 A. M. }	
Tuesday, February 4, 4:35 P. M.....	First Term Ends.
Wednesday, Thursday, Friday, February 5, 6, 7.....	Farmers' Week.
Monday, February 10, 8:20 A. M.....	Second Term Begins.
Registration, 9:00 A. M. Recitations begin 1:00 P. M.	
Saturday, February 22.....	Washington's Birthday.
Friday, March 21.....	Good Friday.
Friday, May 9.....	Arbor Day.
Friday, May 30.....	Memorial Day.
Sunday, June 15.....	Baccalaureate Address.
Thursday, June 19.....	Commencement Exercises.







## RHODE ISLAND STATE COLLEGE.

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### Foundation.

The college is one of the so-called land-grant colleges. Of the purpose of these institutions Senator Morrill, the author of the national legislation which brought them into existence in all the states, says:

“The fundamental idea was to offer an opportunity in every state for a liberal and larger education to large numbers, not merely those destined to sedentary professions, but to those needing higher instruction for the world’s business, for the industrial pursuits and professions of life.” Again he says: “It was to give a chance to the industrial classes of the country to obtain a liberal education, something more than what was bestowed by our universities and colleges in general, which seemed to be based more on the English plan of giving education only to what might be called the professional classes, in law, medicine, and theology.”

The college has also a well-defined investigative purpose in its experiment station, organized as a department of the college and endowed by the general government.

The resources of the college are as follows:

(1) The interest on \$50,000, which was the net amount received by the state from the sale of its scrip for 120,000 acres of land, granted by the general government in 1862. This fund came to the college in 1894.

(2) The annual appropriation of \$15,000 from the general government, under what is known as the Hatch Act of 1887. This fund is exclusively for experimental purposes.

(3) The annual appropriation of \$25,000 from the general government under the second Morrill Act of 1890. This fund is for teaching the subjects distinctly named and specified in the act, as

follows: "to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

(4) The funds coming from the general government to the state under the Adams Act of 1906, yielding each year \$15,000. This fund is exclusively for experimental purposes.

(5) The funds from the general government under the Nelson Amendment of 1907, amounting yearly to \$25,000. This amendment is simply an extension of the 1890 Morrill grant and carries the same restrictions.

(6) The annual maintenance fund from the state, of \$25,000, used for all the purposes for which the funds of the general government can not be used: *e. g.*, for extension work; for executive and administrative work; for heating, lighting and maintenance of buildings; for the teaching of modern language other than English; for the teaching of history and civics; for student labor, maintenance of grounds, roads, etc.

The college was founded in 1888 as an agricultural school. In 1892 it was incorporated as a college. The courses of study have been on a college basis since 1892; the requirements for a degree were raised in 1898; and the curriculum was again thoroughly revised during the years 1906-07 and 1907-08. The course in home economics for young women was introduced in 1908.

### Object and Organization.

The function of the Rhode Island State College is to aid in fostering the industrial life of the state, at least in so far as pertains to agriculture, manufactures, transportation, and home-making. This it does in three ways: 1. By the investigation and discovery of new truth more or less directly applicable in the industries. 2. By the direct distribution of industrial information to the people. 3. By the organization and administration of definite courses of instruction designed to fit young men and young women for effective work in the industrial pursuits.

The first of these duties is performed by the

## Experiment Station,

for a description of the work of which the reader is referred to the report of the director, constituting Part II of the report of the Board of Managers for the current year. A statement of its staff organization may be found on page 9 of this catalogue.

The experiment station takes part, also, in the second phase of the college activities, by distributing its bulletins to all that desire and apply for them. In order, however, more fully and directly to bring the college and its work into touch with the people, a

## College Extension Department

has been organized, and is in active operation.

The purpose of this department is to carry the instruction of the college to those who cannot come to it for study. Whenever necessary and possible, visits will be made to any part of the state to examine farms, orchards, and gardens; to identify injurious insects or plant diseases, or give instruction in regard to methods of treatment; or to examine soils with a view to suggesting remedies for lack of fertility. General plans for laying out farms and for carrying out the details of any farm operation will be given the fullest consideration. The college is available for consultation at any time in regard to any problem of the farm, garden, or orchard. The fullest correspondence is invited, and conscientious consideration will be given to every letter received. In conjunction with this phase of the work, popular bulletins are issued from time to time, which endeavor to present the gist of agricultural information on various topics without the uninteresting detail of the regular experiment-station bulletin.

Whenever possible, arrangements will be made for demonstrations or lectures by members of the college faculty and experiment-station staff when called for by any agricultural meeting or neighborhood gathering. A number of lectures on various subjects has been prepared, which can be secured on short notice by any gathering or organization within the state. These lectures are free, the only charge being the traveling expenses of the speaker. A complete list of the lectures, together with such other information in regard to them as may be of interest, has been prepared and may be obtained by sending a postal-card request to the department.

An important part of this extension work is to be the encouragement of home study and the conducting of correspondence courses. For the present, time and funds will not permit the carrying out of this plan, but advice will be given to any person wishing to take up home study regarding courses of reading, books, and other literature which may be necessary in connection with such work.

Under the direction of the state commissioner of public schools, books on agriculture, home economics, and related subjects, have been purchased, and, together with a selected list of bulletins and reports, have been made up into a traveling library to be sent out over the state. The demand for this library has been so great that Commissioner Ranger has recently purchased books for four more libraries, which are now ready for distribution. If these are not sufficient, books for additional libraries will be purchased as the demand increases.

The Extension Department aims to encourage nature study, school gardening, and elementary agriculture, and for this purpose maintains the following lines of extension work:

1. NATURE STUDY.—This is encouraged through the publication of a little leaflet called the Nature Guard, and the organization of boys and girls in the schools and elsewhere into bands called Nature Guard bands, the purpose of which is to awaken in its members a livelier interest in the things of outdoor life. It endeavors to stimulate the powers of observation and lay the foundation for a simple, rational education which shall give the individual a love for nature and a sympathy with his environment and furnish him with a means of making life more useful and more enjoyable, whether lived in the country or in the city.

2. SCHOOL GARDENS.—The extension department endeavors to aid schools and organizations in carrying on children's gardens. An instructor is employed who gives a large part of his time to this work and who gives the children direct personal instruction in methods of preparing the ground, planting, cultivating, and harvesting garden crops.

Home gardens are also encouraged, and advice given through correspondence and by circulars about the best methods of cultivating garden crops. At the suggestion of the department, the Washington County Agricultural Society and the Newport County Agri-



cultural Society will offer prizes for exhibits from children's gardens, and for seed and plant collections.

3. **ELEMENTARY AGRICULTURE.**—As an aid to the introduction of elementary agriculture in the public schools, the department has undertaken to promote, in coöperation with various other educational and agricultural organizations in the state, a boys' corn growing contest. A premium list, for which the Board of Agriculture, the college, and a number of other organizations, business firms, and individuals, have provided prizes, has been issued, also a bulletin giving methods of growing and exhibiting corn. A state exhibition, for which the State Horticultural Society will provide space, will be held in the autumn. Granges, church organizations, Y. M. C. A.'s and schools have been asked to aid in forming boys' clubs, and in addition, where clubs cannot well be formed, individuals have been encouraged to take part in the contest.

Further notes in regard to this work are given in leaflets and circulars issued by the extension department, and correspondence from anyone who may be interested in regard to the same is invited.

## The College as an Educational Agency.

In its third form of activity, the purpose and work of the Rhode Island State College is to give college training and culture to young men and young women, not in spite of, but through and with vocational studies. Its courses are intended, first of all, to make the student a self-supporting unit in society, a positive force for social advancement, able and willing not only to maintain himself, but also to carry something of the common social burdens that always weigh upon the thoroughly efficient worker.

### I. THE FOUR-YEAR COURSES.

To this end certain college courses, intended to fit men and women for efficiency and leadership in well-defined life-activities, have been prepared. These courses are all founded upon training in mathematics, pure and applied; the English language as a means of inter-communication; and the sciences that deal with matter, force, and life as applied more directly to agriculture, the mechanic arts, and home economics. In the pursuit of these vocational studies, the



effort is to accumulate an array of knowledge that, in the activities of industrial life, must be always practically serviceable, and, at the same time, to gain a disciplinary training both of brain and of muscle and nerve that make for practical effectiveness. These courses, moreover, recognizing that a college course should include not only intellectual training and the knowledge and skill requisite for bread-winning, but also preparation for citizenship, for moral and social life, have intertwined with the vocational work and study previously mentioned, the subjects that most directly make for culture and morality—history, economics, literature, languages, ethics, psychology, and sociology. These are ranked as of equal importance with the bread-winning studies.

The college courses just discussed are four years in length, and base themselves directly on the work of the four years of the high schools. They thus become an integral part of the school system of the state. Young men and young women, citizens of the state and having requisite high-school training, are admitted to these courses without charge for tuition.

The four-year courses thus offered are the agricultural course, the engineering course, the teachers' course in applied science, and the course in home economics.

### The Agricultural Course.

The agricultural course is intended to give thorough preparation for taking charge of and operating a piece of landed property. Its work is centered around instruction and practice in horticulture, general farming, and animal husbandry (more especially as applied to dairying and the poultry industry). The course consists of practical work combined with thorough study of the sciences bearing directly on such work, viz.: botany, chemistry, geology, zoölogy, anatomy, physics, and entomology. In addition, it embraces the culture and mental discipline arising from the study of mathematics, English composition and rhetoric, history, drawing, modern languages, economics, and English literature. The course is planned to give the student a full and rounded development as worker, as citizen, and as man.

All agricultural students will follow the same work in the first three years; but, at the beginning of the Senior year, with the required work for all students in the course, three optional lines of work are

offered, one of which must be selected by the student and followed until graduation. The three lines offered are agronomy, horticulture, and animal husbandry. No option and no subject will be given for which a number of students sufficient to warrant giving it has not applied. The tabulated course follows:

### Freshman Year.

FIRST TERM.	CREDITS.*	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I)...	3	Rhetoric and Composition (English I)...	3
German or French (I or II).....	3	German or French (I or II).....	3
Algebra (Math. I) Trigonometry (Math. II).....	5	General Chemistry and Qualitative Analysis (Chem. II).....	3[1½]
General Chemistry (Chem. I).....	2[1½]	General Botany (Botany I).....	1[2]
General Botany (Botany I).....	1[2]	Stock Judging (An. Husb. I).....	[2]
Propagation of Plants (Hort. I).....	1[1]	Breeds (An. Husb. III).....	2
Drawing, Pencil (Fr. Dr. II).....	[1]	Poultry (An. Husb. XII).....	[1]
Drill (Mil. Sci. and T. I).....	[1]	Spraying and Pruning (Hort. IV).....	1[1]
Theory (Mil. Sci. and T. II).....	1	Drill (Mil. Sci. and T. I).....	[1]
		Theory (Mil. Sci. and T. II).....	1

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I)...	1	Debating (Oral Expr. II).....	1
German or French (II).....	3	German or French (II).....	3
Qualitative Analysis (Chem. III).....	[3]	Organic Chemistry (Chem. IV).....	3[1]
Economic Botany (Botany II).....	1[2]	Descriptive Physics (Physics I).....	5
General Zoölogy (Zoöl. I).....	2[2]	Physiology (Zoöl. III).....	3[1]
Forage Plants (Agron. II).....	2	Geology (I).....	2
Vegetable Gardening (Hort. II).....	2	Drill (Mil. Sci. and T. I).....	[1]
Surveying (Civ. Eng. I).....	1[2]		
Drill (Mil. Sci. and T. I).....	[1]		

### Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Principles of Criticism (English IV)....	4	Debating (Oral Expr. III).....	1
Debating (Oral Expr. III).....	1	Industrial History (History I).....	4
Agricultural Chemistry (Chem. XIV)....	3[1]	Forestry (Botany IV).....	2
Soils and Fertilizers (Agron. III).....	4[1½]	Economic Entomology (Zoöl. IV).....	3[1]
Dairy Practice (An. Husb. VII).....	1[1½]	Farm Crops (Agron. IV).....	3[1]
Fruit Culture (Hort. III).....	2	Farm Management (Agron. VII).....	2
Drill (Mil. Sci. and T. I).....	[1]	Farm Machinery (Agron. VI).....	2[1]
		Drill (Mil. Sci. and T. I).....	[1]

### Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II).....	4	Civil Government (History II), Principles of Criticism—The Drama (English V).....	4
Oratory (Oral Expr. IV).....	1	Oratory (Oral Expr. IV).....	1
Agric. Experimentation (Agron. X)....	3	Breeding (An. Husb. IV).....	3
Plant Breeding (Agron. XI).....	3	Vet. Medicine (An. Husb. X).....	3
Feeding (An. Husb. VI).....	3	Landscape Gardening (Hort. XIII)....	2[1]
Landscape Gardening (Hort. XIII)....	2[1]	Elective.....	8
Elective.....	5	Drill (Mil. Sci. and T. I).....	[1]
Drill (Mil. Sci. and T. I).....	[1]		

\*A credit is given for one recitation per week; or for one exercise of two hours per week in laboratory, field, or shop. Credits for the latter are enclosed in brackets.

## The Engineering Course.

The engineering course has the same duration and the same general plan as the agricultural course. Students will follow the course as laid down until the second half of the Sophomore year, at which time they must elect one of the four optional lines offered, viz.: mechanical, electrical, civil, and chemical engineering. Any line of work for which the number of applicants is insufficient to warrant giving it, the college reserves the right to withdraw.

The course is arranged to prepare young men for skilled and efficient work in the great manufacturing and commercial industries of the state; in the development of electricity as a motive force and in its thousand-fold other applications to the arts and to the life of society; in the activities of the new road-building era upon which we are entering; and in the applications of chemistry as now found in the great industrial establishments. At the same time, in this as in all other courses, it is not forgotten that the man is not a mere lever in his own machinery, and the effort after breadth and completeness of life is steadily maintained. The tabulated course follows:

### Freshman Year.

For the first year the course is the same for all students of engineering.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I)...	3	Rhetoric and Composition (English I)...	3
German or French (I or II) .....	3	German or French (I or II) .....	3
Algebra (Math. I) Trigonometry (Math. II) .....	5	Trigonometry, complete (Math. VII), Analytics (Math. VIII) .....	5
General Chemistry (Chem. I) .....	2 [1½]	General Chemistry and Qualitative Analysis (Chem. II) .....	3 [1½]
Mechanical Drawing (Mech. Eng. I)...	[3]	Mechanical Drawing (Mech. Eng. I)...	[2]
Forge and Foundry (Mech. Eng. II)...	[3]	Pattern Making (Mech. Eng. III) .....	[3]
Drill (Mil. Sci. and T. I) .....	[1]	Drill (Mil. Sci. and T. I) .....	[1]
Theory (Mil. Sci. and T. II) .....	1	Theory (Mil. Sci. and T. II) .....	1

### MECHANICAL ENGINEERING.

#### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II) .....	1	Argumentation (English III) .....	1
Interpretive Reading (Oral Expr. I) .....	1	Debating (Oral Expr. II) .....	1
Qualitative Analysis (Chem. III) .....	[3]	General Physics (Physics II) .....	4
General Physics (Physics II) .....	4	Laboratory (Physics III) .....	[1½]
Laboratory (Physics III) .....	[1½]	Calculus, completed (Math. XI) .....	5
Analytics, completed (Math. IX), Calculus (Math. X) .....	5	Graphic Statics (Mech. Eng. IV) .....	2
Descriptive Geometry (Mech. Eng. V) ..	1 [2]	Mechanical Drawing (Mech. Eng. VI) ..	[3]
Surveying (Civ. Eng. I) .....	1 [2]	Mechanism (Mech. Eng. XII) .....	3
Drill (Mil. Sci. and T. I) .....	[1]	Drill (Mil. Sci. and T. I) .....	[1]

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Principles of Criticism (English IV)....	4	Debating (Oral Expr. III).....	1
Debating (Oral Expr. III).....	1	Industrial History (History I).....	4
Heat Engineering (Mech. Eng. IX)....	3	Heat Engineering (Mech. Eng. IX)....	3
Applied Mechanics (Mech. Eng. X)....	5	Applied Mechanics (Mech. Eng. X), Hydraulics Mech. Eng. XI).....	5
Machine Drafting (Mech. Eng. VIII)....	[3]	Valve Gears (Mech. Eng. XIII).....	3
Machine Shop (Mech. Eng. XIV).....	[3]	Machine Shop (Mech. Eng. XIV).....	[3]
Experimental Engineering a (Mech. Eng. XV).....	[2]	Experimental Engineering b (Mech. Eng. XVI).....	[2]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II).....	4	Civil Government (History II), Princi- ples of Criticism—The Drama, (Eng- lish V).....	4
Oratory (Oral Expr. IV).....	1	Oratory (Oral Expr. IV).....	1
Experimental Engineering c (Mech. Eng. XVII).....	2 [2]	Experimental Engineering d (Mech. Eng. XVIII).....	[2]
Machine Design (Mech. Eng. XX).....	[3]	Machine Design (Mech. Eng. XX).....	[3]
Power Plants and Design (Mech. Eng. XXI).....	2 [1]	Heating and Ventilation (Mech. Eng. XIX).....	1
Assigned Work (Mech. Eng. XXII)....	3	Assigned Work (Mech. Eng. XXII)....	3
Theory of Direct Currents (El. Eng. I).	3	Theory of Alternating Currents (El. Eng. IV).....	2
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]
		Dynamics of Machines (Mech. Eng. XXIII).....	2
		Works Management (Mech. Eng. XXIV).....	1
		Direct Current Laboratory (El. Eng. II).	[3]

## ELECTRICAL ENGINEERING.

## Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I)...	1	Debating (Oral Expr. II).....	1
Qualitative Analysis (Chem. III).....	[3]	General Physics (Physics II).....	4
General Physics (Physics II).....	4	Laboratory (Physics III).....	[1½]
Laboratory (Physics III).....	[1½]	Calculus, completed (Math. XI).....	5
Analytics, completed (Math. IX), Cal- culus (Math. X).....	5	Graphic Statics (Mech. Eng. IV).....	2
Descriptive Geometry (Mech. Eng. V)...	1 [2]	Mechanical Drawing (Mech. Eng. VI)...	[3]
Surveying (Civ. Eng. I).....	1 [2]	Machine Shop (Mech. Eng. VII).....	[3]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]
		Electrical Measurements, (El. Eng. III).	½

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Principles of Criticism (English IV)....	4	Debating (Oral Expr. III).....	1
Debating (Oral Expr. III).....	1	Industrial History (History I).....	4
Theory of Direct Currents (El. Eng. I).	3	Direct Current Laboratory (El. Eng. II).	[3]
Electrical Measurements (Physics IV)...	1	Theory of Alternating Currents (El. Eng. IV).....	2
Electrical Meas. Laboratory (Physics V)...	[1½]	Heat Engineering (Mech. Eng. IX)....	3
Heat Engineering (Mech. Eng. IX)....	3	Applied Mechanics (Mech. Eng. X)...	5
Applied Mechanics (Mech. Eng. X)....	5	Hydraulics (Mech. Eng. XI).....	5
Experimental Engineering a (Mech. Eng. XV).....	[2]	Experimental Engineering b (Mech. Eng. XVI).....	[2]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]
Principles of Illumination (Phys. VI)...	1 [1½]		



## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II).....	4	Civil Government (History II), Principles of Criticism—The Drama (English V).....	4
Oratory (Oral Expr. IV).....	1	Oratory (Oral Expr. IV).....	1
Theory of Alternating Currents (El. Eng. V).....	3	Theory of Alternating Currents (El. Eng. V).....	3
Alternating-Current Laboratory (El. Eng. VI).....	[3]	Alternating Current Laboratory (El. Eng. VI).....	[3]
Telephone Engineering (El. Eng. VIII).....	1	Design of Electrical Machinery (El. Eng. VII).....	[3]
Assigned Work (El. Eng. XII).....	[3]	Electric-Railway Engineering (El. Eng. XI).....	2
Experimental Engineering c (Mech. Eng. XVII).....	2 [2]	Assigned Work (El. Eng. XII).....	[3]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]
Transmission of Energy (El. Eng. X).....	2		
Power Plants (Mech. Eng. XXI).....	2		

## CIVIL ENGINEERING.

## Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I).....	1	Debating (Oral Expr. II).....	1
Qualitative Analysis (Chem. III).....	[3]	General Physics (Physics II).....	4
General Physics (Physics II).....	4	Laboratory (Physics III).....	[1½]
Laboratory (Physics III).....	[1½]	Calculus completed (Math. XI).....	5
Analytics, completed (Math. IX), Calculus (Math. X).....	5	Graphic Statics (Mech. Eng. IV).....	2
Descriptive Geometry (Mech. Eng. V).....	1 [2]	Mechanical Drawing (Mech. Eng. VI).....	[3]
Surveying (Civ. Eng. I).....	1 [2]	Machine Shop (Mech. Eng. VII).....	[1½]
Drill (Mil. Sci. and T. I).....	[1]	Topographic Surveying (Civ. Eng. II).....	1 [2]
		Drill (Mil. Sci. and T. I).....	[1]

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Principles of Criticism (English IV).....	4	Debating (Oral Expr. III).....	1
Debating (Oral Expr. III).....	1	Industrial History (History I).....	4
Graphic Statics (Civ. Eng. IV).....	2	Railroad Engineering (Civ. Eng. III b).....	3
Steam Engineering (Mech. Eng. XXV).....	3	Applied Mechanics (Mech. Eng. X), Hydraulics (Mech. Eng. XI).....	5
Applied Mechanics (Mech. Eng. X).....	5	Experimental Engineering b (Mech. Eng. XVI).....	[2]
Railroad Engineering (Civ. Eng. III a).....	5	Geology (I).....	2
Drill (Mil. Sci. and T. I).....	[1]	Roads and Pavements (Civ. Eng. V).....	3 [1]
		Drill (Mil. Sci. and T. I).....	[1]

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II).....	4	Civil Government (History II), Principles of Criticism—The Drama (English V).....	4
Oratory (Oral Expr. IV).....	1	Oratory (Oral Expr. IV).....	1
Experimental Engineering c (Mech. Eng. XVII).....	2 [2]	Experimental Engineering d (Mech. Eng. XVIII).....	[2]
Bridge Details (Civ. Eng. VI).....	[2]	Bridge Design (Civ. Eng. VIII).....	[3]
Bridge Analysis (Civ. Eng. VII).....	2	Reinforced Concrete (Civ. Eng. X).....	2
Masonry Construction (Civ. Eng. IX).....	2 [1]	Water Supply (Civ. Eng. XII).....	3
Sewerage (Civ. Eng. XI).....	2	Tunneling (Civ. Eng. XIII).....	1
Assigned Work (Civ. Eng. XV).....	3	Contracts and Specifications (Civ. Eng. XIV).....	2
Drill (Mil. Sci. and T. I).....	[1]	Assigned Work (Civ. Eng. XV).....	3
		Drill (Mil. Sci. and T. I).....	[1]



## CHEMICAL ENGINEERING.

## Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I)....	1	Debating (Oral Expr. II).....	1
Qualitative Analysis (Chem. III).....	[3]	General Physics (Physics II).....	[1½]
General Physics (Physics II).....	4	Laboratory Physics (Physics III).....	4
Laboratory (Physics III).....	[1½]	Calculus, completed (Math. XI).....	5
Analytics, completed (Math. IX), Cal- culus (Math. X).....	5	Graphic Statics (Mech. Eng. IV).....	2
Descriptive Geometry (Mech. Eng. V)....	1 [2]	Organic Chemistry (Chem. IV).....	3 [1]
German (Ger. II).....	3	Mechanism (Mech. Eng. XII).....	3
Drill (Mil. Sci. and T. I).....	[1]	German (Ger. II).....	3
		Drill (Mil. Sci. and T. I).....	[1]

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Principles of Criticism (English IV)....	4	Debating (Oral Expr. III).....	1
Debating (Oral Expr. III).....	1	Industrial History (History I).....	4
Heat Engineering (Mech. Eng. IX).....	3	Heat Engineering (Mech. Eng. IX)....	1½
Applied Mechanics (Mech. Eng. X).....	5	Organic Chemistry (Chem. VI).....	[3]
Quantitative Analysis (Chem. VII)....	[3]	Quantitative Analysis (Chem. VIII)....	[4½]
Physical Chemistry (Chem. XII).....	3 [1]	Determinative Mineralogy (Chem. XI)...	[1½]
Reports and Discussions (Chem. XXI)....	1	Industrial Chemistry (Chem. XVI)....	4
Drill (Mil. Sci. and T. I).....	[1]	Reports and Discussion (Chem. XXI)...	1
		Drill (Mil. Sci. and T. I).....	[1]

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II).....	4	Civil Government (History II), Princi- ples of Criticism—The Drama (Eng- lish V).....	4
Oratory (Oral Expr. IV).....	1	Oratory (Oral Expr. IV).....	1
Quantitative Analysis (Chem. VIII)....	[3]	Metallurgy (Chem. XIII).....	2
Experimental Engineering a (Mech. Eng. XV).....	[2]	Industrial Chemistry. XVII).....	[3]
Theory of Direct Currents (El. Eng. I).. Organic Chemistry (Chem. V).....	3	Assaying (Chem. XVIII).....	[2]
Reports and Discussions (Chem. XXI)....	1	Reports and Discussions (Chem. XXI)....	1
Assigned Work (Chem. XX).....	3	Assigned Work (Chem. XX).....	3
Drill (Mil. Sci. and T. I).....	[1]	Electro-Chemistry (Chem. XXII).....	3
		Drill (Mil. Sci. and T. I).....	[1]

## Teachers' Courses in Applied Science.

This course is intended to prepare persons to teach in industrial schools those branches of applied science that pertain especially to agriculture and the mechanic arts. In such schools it has been found of especial importance that the teachers be trained in an environment of current thought, sympathetic with the industrial applications of science and intelligently appreciative of the methods and problems of such work. In response, therefore, to the need, and in accordance with an expressed purpose of the latest fund from the United States Government, we have constructed this course. The effort has been to make the course effective for its purpose, while at the same time retaining for it that breadth and that cultural

influence that are necessary to fit the whole man or woman for social life and are especially important in persons who, as teachers, will exercise large personal influence over immature youth.

The general plan of the course is the same as that of the other two courses just described. It offers to the student, at the beginning of the Junior year, three options, one of which he must select in conjunction with certain studies required of all. The tabulated course follows:

### Freshman Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I)...	3	Rhetoric and Composition (English I)...	3
German or French (I or II).....	3	German or French (I or II).....	3
Algebra (Math. I), Trigonometry (Math. II).....	5	General Chemistry and Qualitative Analysis (Chem. II).....	3 [1½]
General Chemistry (Chem. I).....	2 [1½]	General Botany (Botany I).....	1 [2]
General Botany (Botany I).....	1 [2]	Trigonometry, completed (Math. VII), Analytics (Math. VIII).....	5
Propagation of Plants (Hort. I).....	1 [1]	Drawing, Pencil (Fr. Dr. II).....	[1]
Drawing, Pencil (Fr. Dr. II).....	[1]	Drill (Mil. Sci. and T. I), and Theory (Mil. Sci. and T. II).....	1 [1]
Drill (Mil. Sci. and T. I), and Theory (Mil. Sci. and T. II).....	1 [1]	Euthenics (Home Econ. III b) and Physical Training.....	1 [1]
Hygiene (Home Econ. III a) and Physical Training.....	1 [1]		

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I)...	1	Debating (Oral Expr. II).....	1
German or French (II).....	3	German or French (II).....	3
Qualitative Analysis (Chem. III).....	[3]	Organic Chemistry (Chem. IV).....	3 [1]
Economic Botany (Botany II).....	1 [2]	Physiology (Zoöl. III).....	3 [1]
General Zoölogy (Zoöl. I).....	2 [2]	Geology (I).....	[2]
General Physics (Physics II).....	4	General Physics (Physics II).....	4
Laboratory (Physics III).....	[1½]	Laboratory (Physics III).....	[1½]
Drill (Mil. Sci. and T. I) or Physical Training.....	[1]	Drill (Mil. Sci. and T. I) or Physical Training.....	[1]

### Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Principles of Criticism (English IV)....	4	Debating (Oral Expr. III).....	1
Debating (Oral Expr. III).....	1	Industrial History (History I).....	4
Psychology (Psy. and Ed. IV).....	3	Drill (Mil. Sci. and T. I) or Physical Training.....	[1]
Drill (Mil. Sci. and T. I) or Physical Training.....	[1]	Elective.....	5
Elective.....	5	Options: A, B, C.	
Options: A, B, C.		All of the subjects in one of the following groups must be chosen:	
All of the subjects in one of the following groups must be chosen:		A. Agriculture.	
A. Agriculture.		Farm Crops (Agron. IV).....	3 [1]
Soils (Agron. III).....	4 [1½]	Economic Entomology (Zoöl. IV).....	3 [1]
Veg. Gardening (Hort. II) or Fruit Culture (Hort. III).....	2	Forestry (Botany IV).....	2
B. Biology.		B. Biology.	
Vertebrate Anatomy (Zoöl. VII).....	[3]	Histology and Embryology (Zoöl. VIII)...	2 [3]
Plant Histology (Botany V).....	1 [4]	Plant Pathology (Botany VI).....	1 [4]
C. Chemistry.		C. Chemistry.	
Quantitative Analysis (Chem. VIII)....	[3]	Organic Chemistry (Chem. VI).....	[3]
Physical Chemistry (Chem. XII).....	3 [1]	Quantitative Analysis (Chem. VIII)...	[4½]
Reports and Discussions (Chem. XXI)....	1	Mineralogy (Chem. XI).....	[1½]
		Reports and Discussions (Chem. XXI)....	1

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II).....	4	Civil Government (History II), Principles of Criticism—The Drama (English V).....	4
Oratory (Oral Expr. IV).....	1	Oratory (Oral Expr. IV).....	1
History of Education (Psy. and Ed. I)...	3	Secondary Education (Psy. and Ed. III)	2
Principles of Education (Psy. and Ed. II)	2	Assigned Work.....	3
Assigned Work.....	3	Drill (Mil. Sci. and T. I) or Physical Training.....	[1]
Drill (Mil. Sci. and T. I) or Physical Training.....	[1]	Options: A, B, C.	
Options: A, B, C.		All of the subjects in one of the following groups must be chosen:	
All of the subjects in one of the following groups must be chosen:		A. <i>Agriculture.</i>	
A. <i>Agriculture.</i>		Landscape Gardening (Hort. XIII)....	2 [1]
Poultry (An. Husb. XII).....	2 [1]	Floriculture (Hort. VI).....	1 [1]
Landscape Gardening (Hort. XIII)....	2 [1]	Farm Buildings (An. Husb. XI).....	[1]
Feeding (An. Husb. VI).....	3	Breeding (An. Husb. IV).....	3
B. <i>Biology.</i>		B. <i>Biology.</i>	
Plant Breeding (Agron. XI).....	3	General Zoölogy (Zoöl. II).....	1 [2]
Trees and Shrubs (Botany III).....	[1]	Entomology (Zoöl. V).....	2 [2]
Entomology (Zoöl. V).....	1 [2]	Trees and Shrubs (Botany III).....	[1]
C. <i>Chemistry.</i>		C. <i>Chemistry.</i>	
Physical Chemistry (Chem. XII).....	3 [1]	Electro-Chemistry (Chem. XXII)....	3
Reports and Discussions (Chem. XXI)...	1	Industrial Chemistry (Chem. XVI)....	4
		Industrial Chemistry (Chem. XVII)....	[3]
		Reports and Discussions (Chem. XXI)...	1

## The Course in Home Economics.

The object of the home economics course is to fit young women for homemaking and to provide adequate training for teachers of the various household arts. Nowhere is the application of modern science to everyday life more important than in the home. In no other lifework do women find greater need of scientific knowledge and technical skill than in the intelligent and economic administration of household affairs.

The course includes instruction in the planning, sanitation, decoration, and care of the house and its administration on the economic side; the preparation of food from the scientific and economic points of view; the study of nutrition; the discussion of problems of personal and public hygiene and instruction in the care of infants and young children. During one year instruction is given in hand sewing, machine practice, and in drafting, cutting, and making of plain garments. Although the main work is scientific and technical, the importance of artistic and literary training for home life has not been neglected. It is recognized that all the knowledge of right living is needed to assist the student to a broader conception of citizenship as well as in performing the manifold duties of daily life.

Attention has also been given, in planning the course, to the need of students desiring to enter special fields of domestic activity along institutional and educational lines of work.

The entrance requirements are the same as for the other college courses. Thirty-eight of the credits required for graduation, are in the home economics department. Students are expected to take the course as outlined below, with choice of electives; but when entered in other courses in the college they may elect certain work in the home economics department, under direction of the head of the department. The tabulated course follows:

### Freshman Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I)...	3	Rhetoric and Composition (English I)...	3
German or French (I or II).....	3	German or French (I or II).....	3
Algebra (Math. I), Trigonometry (Math. II).....	5	General Chemistry and Qualitative Analysis (Chem. II).....	3 [1½]
General Chemistry (Chem. I).....	2 [1½]	General Botany (Botany I).....	1 [2]
General Botany (Botany I).....	1 [2]	Drawing, Pencil (Fr. Dr. II).....	[1]
Drawing, Pencil (Fr. Dr. II).....	[1]	Physical Training.....	[1]
Physical Training.....	[1]	Domestic Art (H. Ec. I).....	[2]
Domestic Art (H. Ec. I).....	[1]	Elementary Cookery (H. Ec. II).....	1 [1]
Hygiene (H. Ec. IIIa).....	1	Euthenics (H. Ec. IIIb).....	1

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	1
Interpretive Reading (Oral Expr. I)....	1	Debating (Oral Expr. II).....	1
German or French (II).....	3	German or French (II).....	3
Qualitative Analysis (Chem. III).....	[3]	Organic Chemistry (Chem. IV).....	3 [1]
General Zoölogy (Zoöl. I).....	2 [2]	Physiology (Zoöl. III).....	3 [1]
Color Problems (Fr. Dr. IV).....	[1]	Descriptive Physics (Physics I).....	5
Physical Training.....	[1]	Physical Training.....	[1]
Foods (H. Ec. IV).....	3 [1½]	Foods (H. Ec. IV).....	2 [1½]
Household Management (H. Ec. V)....	2		

### Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Principles of Criticism (English IV)....	4	Debating (Oral Expr. III).....	1
Debating (Oral Expr. III).....	1	Industrial History (History I).....	4
Psychology (Psy. and Ed. IV).....	3	Physical Training.....	[1]
Physical Training.....	[1]	Physiological Chemistry (Chem. XIX)...	4
Vertebrate Anatomy (Zoöl. VII).....	[3]	Histology and Embryology (Zoöl. VIII)...	2 [3]
Mechanical Drawing (Mech. Eng. I)....	[1½]	History of Art (Fr. Dr. III).....	2
Human Nutrition (H. Ec. VI).....	3	Freehand Drawing (VIII).....	[1]
Home Decoration (H. Ec. VII).....	2	Dietetics (H. Ec. VIII).....	1 [1]
Elective.....	4	Sanitation (H. Ec. IX).....	2

### Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II).....	4	Civil Government (History II), Principles of Criticism—The Drama (English V).....	4
Oratory (Oral Expr. IV).....	1	Oratory (Oral Expr. IV).....	1
Physical Training.....	[1]	Sociology (Psy. and Ed. VII).....	3
Food Analysis (Chem. X).....	[4]	Physical Training.....	[1]
History of Education (Psy. and Ed. I)...	3	Assigned Work (H. Ec. XIV).....	3 [2]
History of Art (Fr. Dr. III).....	2	Home Nursing (H. Ec. XII).....	2
Food Preservation (H. Ec. X).....	[1]	Therapeutic Cookery (H. Ec. XIII)....	1 [1]
Hygiene and Care of Children (H. Ec. XI).....	2	Elective.....	3
Elective.....	3		



## II. SHORT COURSES IN AGRICULTURE, IN MECHANIC ARTS, AND IN DOMESTIC SCIENCE.

To meet the needs of those who find it inexpedient to undertake a four years' college course, but who, nevertheless, desire to increase their efficiency on the farm, in the home or in industrial pursuits, the college offers what are known as short courses in agriculture, in mechanic arts, and in domestic science.

At present each of these courses is of two years' duration. The only requirements for admission are that candidates shall be at least eighteen years of age and shall have completed the common school course. The courses are in no case supposed to serve as a substitute for the regular work of the college, in character or scope of the subject-matter presented, and do not lead, directly or indirectly, to a degree, a certificate only being granted. Neither are they to be considered as preparatory to the college work. Their particular function is to give, in the shortest, most direct way possible, certain definite, specific, and perhaps uncorrelated information which will be of immediate value on the farm, in the shop, or in the home.

In studies of common interest, like mathematics and English, all short-course students work together. All other instruction is of a special nature and is given in the respective departments of agriculture, mechanical engineering, and home economics. In mathematics work is begun in arithmetic, covers mensuration, gives an elementary treatment of bookkeeping, and proceeds with work of a more advanced character as far as the capabilities of the class will permit. The greatest stress is laid upon the analysis and solution of many practical problems from the farm, the factory, and from daily life. In English, the object is to develop the power of clear analysis and expression by continued drill in grammar and composition, based upon readings in industrial or political history.

The special work in agriculture treats in an elementary way of such subjects as plant life, soils and fertilizers, vegetable gardening, stock judging, crops, dairy practice, poultry, fruit culture, etc. The course in domestic science gives practical instruction in the care of the house, foods, plant life, physical training, home management, etc. The engineering department offers work in the various forms of shop work, draughting, mechanical movements, and practical information in regard to the construction and operation of engines, boilers, and pumps.



Short-course work is of comparatively recent introduction at this institution, and consequently is still in the process of development. It is hoped to increase the effectiveness of each of the above phases of the work at as early a date as possible, by more completely separating them from one another and from other lines of instruction; also, particularly in agriculture and engineering, by a re-adjustment of the time in such a way as to accommodate a greater number of men desiring to take the course. For example, it is proposed to give the agricultural matter in three winter terms of twenty-four weeks each, rather than in two years of thirty-six weeks each, the idea being that the shorter period would enable a larger number of practical farmers to attend. In engineering, the problem is somewhat different. Its proposed solution is as follows:—Demands for definite, special training, as for a dynamo tender or a stationary engineer, may be met by making the courses of instruction largely special or elective. In order that irregular periods of freedom from regular duties may be employed for study, and that each individual's progress may depend only on his own exertions and ability, it is proposed to conduct this department as an ungraded school. This plan should possess the attractions and possibilities of the usual correspondence courses, and be far superior to them in the opportunities for personal instruction and laboratory practice. According to this arrangement, a student might enter at any time and take any one or group of the following subjects: English grammar, and composition based on the technical work; arithmetic and mensuration; mechanical drawing; forge shop; pattern making; machine shop; mechanical movements; elementary discussion of power-plant machinery; elementary electricity; electrical wiring. The tabulated courses follow:

## Agriculture.

### First Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (A).....	5	Elementary English (A).....	5
Plant Life (Botany A).....	1 [2]	Plant Life (Botany A).....	1 [2]
Elementary Zoology (A).....	3 [1½]	Soils, Fertilizers (Agron. A).....	4 [1]
Breeds (An. Husb. A).....	2	Plant and Animal (Chem. A).....	3 [1]
Stock Judging (An. Husb. B).....	[2]	Nursery Practice (Hort. C).....	1 [1]
Plant and Animal (Chem. A).....	3 [1]	Benchwork (Woodwork I).....	[1½]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## Second Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Bookkeeping (Math. G).....	4	Vegetable Gardening (Hort. A).....	2 [1]
Crops and Rotation (Agron. B).....	3 [1]	Farm Management (Agron. C).....	4
Dairy Practice (An. Husb. C).....	1 [2]	Breeding (An. Husb. E).....	2 [1]
Stock Feeding (An. Husb. D).....	3	Poultry (An. Husb. F).....	1 [1]
Fruit Culture (Hort. B).....	3	Farm Buildings (Woodwork H).....	1 [1]
Poultry (An. Husb. F).....	1 [1]	Farm Machinery (Agron. D).....	1 [2]
Care of Farm Animals (An. Husb. G)...	2	Spraying and Pruning (Hort. E).....	1 [1]
Drill (Mil. Sci. and T. I).....	[1]	Home Grounds (Hort. F).....	[1]
		Drill (Mil. Sci. and T. I).....	[1]

## Mechanic Arts.

## First Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (A).....	5	Elementary English (A).....	5
Arithmetic (Math. F).....	5	Arithmetic (Math. F).....	[5]
Mechanical Drawing (Mech. Eng. A)...	[3]	Mechanical Drawing (Mech. Eng. A)...	[3]
Forge and Foundry (Mech. Eng. II)...	[3]	Pattern Making (Mech. Eng. III).....	[3]
Machine Shop (Mech. Eng. VII).....	[3]	Machine Shop (Mech. Eng. VII).....	[3]
Mechanical Movements (Mech. Eng. D)...	3	Mechanical Movements (Mech. Eng. D)...	3
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## Second Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (B).....	3	Elementary English (B).....	3
Bookkeeping (Math. G).....	4	Algebra (Math. H).....	5
Mechanical Drawing (Mech. Eng. B)...	[3]	Mechanical Drawing (Mech. Eng. B)...	[3]
Machine Shop (Mech. Eng. XIV).....	[3]	Machine Shop (Mech. Eng. XIV).....	[3]
Engineering Theory (Mech. Eng. E)...	5	Engineering Theory (Mech. Eng. E)...	5
Elementary Physics (A).....	3	Elementary Physics (A).....	3
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## Domestic Science.

## First Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (A).....	5	Elementary English (A).....	5
Arithmetic (Math. F).....	5	Arithmetic (Math. F).....	5
Plant Life (Botany A).....	1 [2]	Plant Life (Botany A).....	1 [2]
Elementary Zoölogy (A).....	3 [1½]	Floriculture (Hort. D).....	[2]
Household Technique (Dom. Sci. A)...	1	Foods (Dom. Sci. C).....	3 [1½]
Sewing (Dom. Sci. B).....	[1]	Physical Training.....	[1]
Physical Training.....	[1]		

## Second Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (B).....	3	Elementary English (B).....	3
Bookkeeping (Math. G).....	4	Algebra (Math. H).....	5
Plant and Animal (Chem. A).....	3 [1]	Plant and Animal (Chem. A).....	3 [1]
English History (History A).....	3	English History (History A).....	3
Dietetics (Dom. Sci. D).....	3 [1½]	Management of House (Dom. Sci. E)...	1
Physical Training.....	[1]	Hygiene (Dom. Sci. F).....	1
		Textiles (Dom. Sci. G).....	[1½]
		Physical Training.....	[1]

## II. SPECIAL POULTRY COURSE.

For many years this college has offered a winter course in the poultry industry. In fact, the first poultry course to be offered in the United States was offered here fourteen years ago. The college will continue to offer a course during the winter term.

### Requirements for Admission to the Degree Courses.

#### UNITS.

The requirements for admission are reckoned in units. A "unit" represents the successful completion of a year's study of a subject, to which have been devoted not less than one hundred and twenty recitation periods of sixty minutes each, or their equivalent (*e. g.*, one hundred and eighty periods of forty minutes each). Fourteen units are required. A student may obtain this amount of entrance credit from high-school work or from examination.

#### GROUPS.

The entrance subjects are divided into two groups, A and B. Those in A, with one exception—solid geometry—are required of all candidates for admission.

#### GROUP A.

The school year is reckoned at thirty-six weeks, the minimum length.

English.....	108 weeks.....	3 units.
German or French.....	36 weeks.....	1 unit.
Algebra.....	54 weeks.....	1½ units.
Geometry, Plane.....	36 weeks.....	1 unit.
Geometry, Solid—for engineering students only, 18 weeks.....		½ unit.
Physics.....	36 weeks.....	1 unit.
History.....	36 weeks.....	1 unit.

The remainder of the fourteen units must be taken from

#### GROUP B.\*

No subject is accepted for more than the amount here stated or for less than two-fifths of a unit.

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\*Other subjects not here named will receive due consideration if presented on the application blank, with a statement of the work done.

Foreign Language.....	216 weeks.....	6 units.
Geometry, Solid—for other than engineering students, 18 weeks.....		$\frac{1}{2}$ unit.
Botany.....	36 weeks.....	1 unit.
Chemistry.....	36 weeks.....	1 unit.
Geology.....	18 weeks.....	$\frac{1}{2}$ unit.
Physiography.....	36 weeks.....	1 unit.
Physiology.....	18 weeks.....	$\frac{1}{2}$ unit.
Zoölogy.....	36 weeks.....	1 unit.
History.....	36 weeks.....	1 unit.
Drawing.....	36 weeks.....	1 unit.
Domestic Science.....	18 weeks.....	$\frac{1}{2}$ unit.
Shop Practice.....	18 weeks.....	$\frac{1}{2}$ unit.
Farm Practice.....	18 weeks.....	$\frac{1}{2}$ unit.

### METHODS OF ADMISSION.

On any or all of the subjects named in both groups, satisfactory standings from any reputable high school will be accepted in lieu of examination, on presentation of a copy of the student's full record in the high school, showing clearly the nature of the work pursued in each subject, time devoted to it, and grade of work done. This copy must be duly signed by the proper official of the school, and must be accompanied by a certificate of good moral character. The latter, however, may be from any reputable source. On application, blanks showing definitely the full nature of the information desired from the high school will be furnished.

Candidates not presenting satisfactory standings from reputable high schools will be examined, over ground corresponding to the number of points attached on all the subjects of Group A and on such of Group B as they may offer. Examinations for entrance will be held at the opening of the college year in September, as announced in the calendar, page 10.

### SPECIFICATIONS OF GROUND TO BE COVERED.\*

#### GROUP A.

These subjects, with the exception stated, are required of all students to the extent indicated by the number of units designated in each case.

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\*For any or all of the subjects described below the requirements of the College Entrance Examination Board, upon which these specifications are largely based, will be accepted. A circular stating these requirements in detail and blank forms of application for examination may be obtained by sending ten cents in stamps to the College Entrance Examination Board, Post Office Sub-Station 84, New York City.

## Languages.

ENGLISH, 3 UNITS.—In English two aims are sought: first, a knowledge of the language—including the acquisition of an ample vocabulary and power of effective expression—second, some acquaintance with the literature. To attain the first, grammar and composition must be thoroughly studied. Throughout the secondary-school course there should be much practice in writing along a variety of lines suggested by the pupil's experience, his general interests, and studies other than English. Spelling, punctuation, accuracy of idiom, should receive due attention in all written work; while correct and forceful oral expression should also be insisted upon.

To meet the requirement in literature certain selections are to be made from two lists of works—one for reading, the other for closer study. It is hoped to foster in this way a taste for good books and an intelligent appreciation of them. Committing to memory selected passages and reading aloud are strongly urged. In all cases some knowledge of the author's life and his place in literature should be acquired, while a more exacting study of selected texts would lay emphasis on form and style, meaning of particular words and phrases, and the significance of allusions. The list of books prescribed for 1912-13 may be obtained from the nearest high-school principal.

GERMAN, 1 UNIT.—During the first year the work should consist of drill in pronunciation, the rudiments of grammar, writing from dictation, simple composition and conversation, and the reading of from 100 to 175 pages of easy prose and poetry.

FRENCH, 1 UNIT.—The course in French should parallel that in German. During the first year there should be drill in pronunciation, the rudiments of grammar, writing from dictation, simple composition and conversation, and the reading of from 100 to 175 pages of easy prose and poetry.

## Mathematics.

ALGEBRA,  $1\frac{1}{2}$  UNITS.—The requirement in algebra comprises the four fundamental operations; factoring, highest common factor and lowest common multiple; fractions; linear equations; exponents; radicals; quadratic equations; simultaneous equations involving quadratics; binomial theorem for positive integral exponents. Problems should be given at frequent intervals in the work.

PLANE GEOMETRY, 1 UNIT.—This requirement is met by the usual theorems and constructions of standard text-books, numerous originals, and applications.

SOLID GEOMETRY,  $\frac{1}{2}$  UNIT.—The ground is covered by the usual theorems and constructions of standard text-books, originals, and applications.

## Science.

PHYSICS, 1 UNIT.—This course should consist of class-room work based on a standard text-book, accompanied by lecture-table demonstrations and by numerous practical problems. A parallel course in individual laboratory work is desirable, but is not absolutely required. In the case of laboratory work, one hour of credit will be allowed for each two hours spent in the laboratory.



## History, 1 unit.

The requirement in history will be met by presenting any one of the following subjects: ancient history, especially Greek and Roman, with the chief events of the early Middle Ages to the death of Charlemagne (814); medieval and modern European history from 814 to the present time; English history; American history and civil government.

## GROUP B.

From this group units are to be taken, in addition to those of Group A, sufficient to make up the whole number required. Any combination of units, including fractions not less than two-fifths, will be allowed.

## Languages.

GERMAN, 2 OR 3 UNITS.—The requirement for one unit is indicated under Group A. One unit will also be allowed for second and one each for third and fourth year work. During the second year the course should be a continuation of the first as regards grammar, composition, and conversation. The reading should consist of at least 200 pages of such texts as Arnold's *Fritz auf Ferien*, Wildenbruch's *Das Edle Blut*, Mosher's *Willkommen in Deutschland* and Benedix' *Der Prozess*. Third-year study should emphasize reading and advanced composition. Suitable texts are Riehl's *Der Fluch der Schönheit*, Freytag's *Bilder aus der deutschen Vergangenheit*, Lessing's *Minna von Barnhelm*, Schiller's *Wilhelm Tell*, and Heine's *Die Harzreise*. The fourth year's work should mark a decided advance in the mastery of vocabulary and idiom as shown both in speaking and writing. The works read may be made the basis for themes. The following reading matter is suggested: Freytag's *Soll und Haben*, Fulda's *Der Talisman*, Hauff's *Lichtenstein*, Scheffel's *Ekkehard*, Schiller's *Wallenstein*, *Maria Stuart*, or *Geschichte des dreissigjährigen Krieges* (Book III), Dahn's *Ein Kampf um Rom*, Goethe's *Dichtung und Wahrheit* (Books I-IV).

FRENCH, 2 OR 3 UNITS.—The requirement for one unit is indicated under Group A. One unit will also be allowed for second and one each for third and fourth year work. Throughout the second year the course should be a continuation of the first as regards grammar, composition, and conversation. At least 250 pages of such texts as Bruno's *Le Tour de la France*, Malot's *Sans Famille*, Mérimée's *Colomba*, and Sarcey's *Le Siège de Paris* should be read. In the third year emphasis should be laid on reading. Some time ought also to be given to advanced composition. Among suitable texts may be mentioned Racine's *Athalie*, Corneille's *Le Cid*, Molière's *Le Bourgeois Gentilhomme*, Sandeau's *Mademoiselle de la Seiglière*, Vigny's *La Canne de Jonc*, Hugo's *Le Chute*. From the fourth year's study increased facility in conversation and composition should be gained, and any modern French, other than technical, should be read with ease. Such texts as the following are recommended: the prose works of Dumas père, Hugo's *Ruy Blas*, La Fontaine's *Fables*, Sainte-Beuve's *Essays*, Taine's *Origines de la France Contemporaine*, Pellissier's *Mouvement Littéraire au XIX Siècle*. At least 600 pages should be read.

LATIN, 1 TO 4 UNITS.—A credit of one unit will be given for each year's work in Latin, covering in all a standard beginners' book, four books of Cæsar's Gallic War, six orations of Cicero and six books of Virgil's *Æneid*. It is expected that work in prose composition and sight reading will be included in each subject.

### Mathematics.

SOLID GEOMETRY,  $\frac{1}{2}$  UNIT.—See Group A. For other than engineering students.

### Science.

BOTANY, 1 UNIT.—The preparation in botany should include individual laboratory work recorded by notes and diagrammatic drawings. Field work is desirable, and should also be accompanied by notes. The notebook and drawings certified by the teacher should be presented at the time of application for entrance credit. The year's course of study should consist of three parts, viz.: 1. The general principles of the anatomy, morphology, physiology, and ecology of seed plants. 2. The natural history of the plant groups. The structure, reproduction, and adaptations to habitat of one or two types from each group should be studied. 3. Classification. A brief study of the subdivisions of the above groups. Ability to determine species of flowering plants is not essential. Any standard textbook covering the above field may be used.

CHEMISTRY, 1 UNIT.—An elementary text-book, such as William's *Elements of Chemistry* by Brownlee and others, should be covered by recitations. At least one exercise per week must be devoted to individual work in the laboratory. The pupil must perform forty or more experiments, such as are described in the Report of the College Entrance Examination Board, 1909, and keep a notebook in which he describes the apparatus used, records the phenomena observed, and states the conclusions in his own words, in each experiment.

GEOLOGY,  $\frac{1}{2}$  UNIT.—In geology a study of the following subjects should be made: rock-forming minerals, their names and chemical constituents; earthquakes—their cause and effects; volcanoes—distribution, types, character of eruption, nature of erupted material; supposed physical state of the earth's interior, surface agencies destructive to rocks, with brief illustrations; processes of reconstruction with illustrations; rocks—classification, according to origin, rock fracture and dislocation, rock structure due to erosion, metamorphic rocks, mineral veins and their method of formation; conditions determining land sculpture; the geological periods, with land elevations, and the characteristics of climate, plant and animal life of each period.

PHYSIOGRAPHY, 1 UNIT.—This course should include a consideration of the earth as a globe, the atmosphere, the waters of the earth, the lands, life upon the earth, and the reactions between these elements. Special attention should be given to the questions of climate, the winds, the weather, tides, ocean currents, and to the effect of the ocean in modifying climatic conditions. Attention should be directed to the matter in which the land was originally formed and to the way in which the original formation has been and is being modified by the action of erosion, the winds, and frost. Throughout the course consideration should be given to the

manner in which the various physical characteristics of the earth have affected life upon its surface.

**PHYSIOLOGY,  $\frac{1}{2}$  UNIT.**—The text-book work should cover material equivalent to that of Martin's Human Body or Hough and Sedgwick's Human Mechanism. In addition the applicant should present a notebook, showing laboratory work upon the elementary physiological processes and general structure of mammals.

**ZOOLOGY, 1 UNIT.**—The work should include: 1. The general natural history of a number of common vertebrates and invertebrates common to the locality where the work is given. 2. The classification of these forms into phylum, class and order, with the characteristics of the several groups. 3. The main anatomical features of one vertebrate, two arthropods (one an insect); an annelid, preferably the earthworm, a coelenterate, two protozoans (Amœba and Paramœcium recommended). 4. The general physiology of the above types involving digestion, absorption, circulation, excretion, and nerve function. These should be compared with the same functions in the human body. 5. The following subjects should be brought before the student in connection with the foregoing studies: asexual and sexual reproduction, alternation of generations, regeneration, fertilization, and segmentation of egg cells; adaptation; variations, evidences of relationship between similar groups, the cell structure of animals.

Certified notebooks must be presented, which include notes upon work and discussion in classroom and drawings of the forms dissected.

### History, 1 unit.

See Group A.

### Drawing, 1 unit.

This may be either freehand or mechanical. If freehand drawing is offered, the candidate should submit at least fifteen drawings, the majority to be in pencil, certified as his work by the instructor. These should show ability to sketch from various objects with considerable accuracy of proportion and clearness of line, and a fair understanding of the rules of perspective and light and shade as applied in freehand sketching. A candidate may also present the equivalent of five hours per week for one year in elementary mechanical drawing, lettering, or sketching from models.

### Domestic Science, 1-2 unit.

In domestic science the student must present satisfactory evidence of knowledge in the following subjects: the use and care of the kitchen equipment, general cleaning processes, the marketable forms of staple foods. She must also show credit for at least twelve cooking laboratory lessons of two hours each.

### Shop Practice, 1-2 unit.

The candidate may offer carpentry or any of the various forms of bench-work given in a well-equipped manual training school, equivalent to five hours per week for one-half year.

### Farm Practice, 1-2 unit.

By "farm practice" is meant familiarity with the operations of the farm, such as the harnessing of teams, the use of tillage implements, and the care of dairy animals.

### Degrees.

The degree of Bachelor of Science is conferred upon a student who has completed one of the four-year courses outlined on pages 18-26. The degree of Master of Science is conferred upon those holding a Bachelor's degree from this institution, in regular order, or from other institutions having equal requirements, upon the completion of one year of resident study, the presentation of a satisfactory thesis in applied or economic science, and upon passing examinations in the subjects pursued. Candidates not graduates of this college must file with the committee on graduate study, not later than October first, a detailed statement of their previous work, certified by the proper authorities. They must select, not later than November fifteenth, a major and a minor subject which must be closely related and have the approval of the committee on graduate study and of the professor in whose department the principal work is done. Major subjects may be selected in any of the following departments: agriculture; botany; chemistry; zoölogy; home economics; electrical, mechanical, and civil engineering. The minor may be selected from undergraduate subjects outlined in the catalogue; the major, however, must be advanced work specially arranged with the individual professor. The thesis must be typewritten, upon paper of the size and quality prescribed, and two copies must be in the hands of the president not later than June first.

The requirement for the degree of Mechanical Engineer, Electrical Engineer, or Civil Engineer, consists of three years of successful professional practice subsequent to the Bachelor's degree, one of which must have been in a responsible position; the presentation of an acceptable thesis; and the passing of examinations upon the investigations involved in the thesis.

A registration fee of five dollars is charged for an advanced degree. Students from outside the state pay a tuition fee of thirty dollars during the year of residence. The cost of a diploma is five dollars.



## Teachers' Certificates.

The following resolution adopted by the Board of Education of this state is self-explanatory: "The certification of the president (of this college) that an applicant for a teacher's certificate has pursued a secondary school course of four years, subject to the approval of the committee on qualifications, and in addition thereto has pursued a four years' collegiate course in the Rhode Island College will be received as evidence of the required qualifications in scholastic subjects for a teacher's certificate of the first grade."

By action of the Regents of the State of New York, taken June 9, 1910, the degrees of B. S. and M. S. from this college are accepted as a basis for the issuance of licenses to teach in that state.

## Expenses.

Tuition is free to residents of Rhode Island. To non-residents of the state, tuition is \$15.00 a term, or \$30.00 a year.

The regular college expenses are tabulated as follows:

Board, \$3.75 per week.....	\$135 00
Room-rent, including heat and light.....	30 00
Incidental fee, \$4.50 per term.....	9 00
Laboratory expense, \$5 per term, estimated.....	10 00
Uniform for military drill, estimated.....	16 00
	<hr/>
	\$200 00

The first three items must be paid quarterly in advance; that is to say, \$43.50 will be required at the opening of the year, September 17, 1912, and also at each of the following dates: November 20, 1912; February 10, 1913; and April 14, 1913. Non-residents of the state should add to this sum \$7.50 for tuition each quarter. In order to secure dormitory accommodations, the student is required to deposit one dollar with the application, the dollar to be credited on the fall-term room-rent. If the student fails to take the room, the dollar is forfeited. The uniform also must be paid for at the opening of the college year, in advance. The item of laboratory expense includes all material used in the various laboratories, and the destruction, breakage, or marring of apparatus and tools, and must be paid when bill is presented at the close of each semester.



Nothing has been said concerning books. The probable cost of these will be from \$15.00 to \$30.00 per year. For miscellaneous expenses connected with college life, students should add a sum varying from \$10.00 to \$25.00. A fee of 50 cents will be charged for each second examination to make up a condition. Graduates pay the cost of diplomas, \$5.00. *No diplomas will be issued until all term bills have been paid.* Room-rent and incidental deposit will not be refunded on withdrawal during the quarter. An athletic tax, levied by the students upon themselves, will be taken at the college office at the times set for college dues.

UNIFORM.—Every able-bodied male student is required to drill and to wear a uniform. The uniform must be paid for immediately on entering the college, when the students are measured for the suits. When worn only on drill and properly cared for, one uniform may last two or more years. The student may, however, wear his uniform all the time.

TRANSPORTATION.—The college conveys students daily to and from the railroad station free of charge. Once at the beginning and end of each term, a team conveys trunks to and from the station.

BOARDING STUDENTS.—The price of board for 1912-13 will be \$3.75 per week. Students who *leave regularly every week* on Friday afternoon and return Monday morning will receive a rebate for time of absence. No person will be admitted to the dining-room until he has secured from the bursar a meal ticket, on the back of which will be found the rules governing the holder of such ticket. After this ticket is issued, all charges for board will be made in accordance therewith, unless the student has the ticket changed by the bursar. Arrangement of charges for meals sent to students' rooms for any cause must be made in advance.

DORMITORIES FOR MEN.—East Hall is now in use, affording excellent accommodations for men students. The two upper floors are entirely devoted to rooms for students. The sanitary conveniences on each floor are excellent and ample, including a full complement of shower baths. The first floor contains a large assembly hall, a handsome social room for the men, and a dining-room and kitchen fitted with all modern equipment. South Hall and Watson House are devoted to the use of the fraternities and afford very desirable rooms for dormitory purposes.

**DORMITORY FOR WOMEN.**—During the summer of 1909 the interior of Davis Hall was entirely reconstructed. On the first floor are the administration offices. With the exception of the offices of the extension department on the second floor, the upper floors of the building are utilized for the women's department. The accommodations for women students in this building are under careful supervision, and compare favorably with those at any women's college in the country. There is a neat hospital, with all necessary adjuncts. The oversight of the young women is efficient, kindly, and painstaking. Attention is especially invited to the new facilities and arrangements for the welfare of young women.

**FURNITURE.**—The rooms in the women's dormitory are provided with necessary furniture, including mattresses, but no other bedding material. *All students in the men's dormitory are required to supply their own furniture and bedding.* The necessary furniture may be obtained at the college when desired. A room may be furnished for from \$8.00 to \$10.00. Iron bedsteads three feet wide are included under room-rent. The furniture, if properly kept, may be sold, when the student leaves, for one-half to three-fourths the original price. All students should bring with them such articles as sheets, blankets, pillow, pillow-slips (all for single bed), and towels. Men students are required to purchase mattresses at the college.

**ROOMS IN THE VILLAGE.**—Arrangements have been made for rooms in the village of Kingston, some of these being under college management and others in private houses. In the case of the former, room rent will vary from 60 cents to \$1.00 per week, with heat and light furnished, the student to provide other furnishings. Furnished rooms in private houses for students who occupy them throughout the college year range from \$1.25 to \$2.00 per week.

**COLLEGE STORE.**—Students will be required to pay cash at the store for all books and other supplies.

**DAMAGE FUND.**—All damage not due to ordinary wear will be assessed to students as follows:

1. Students at once acknowledging damage and agreeing to pay for same will be assessed actual cost of repair, including labor.
2. Students found guilty of such damage, but not acknowledging and settling for the damage will be charged double the cost of repair.

3. Students will be responsible for damage in their own rooms. Damage that is not settled as above may be assessed to all the students or to a group of students, pro rata. Each case and the amount of assessment will be considered on its merits.

## Employment at the College.

There is a certain amount of labor about the college buildings, on the farm, at the experiment station, and in the offices and laboratories, for which students will be employed whenever it is feasible to do so. Industrious students frequently earn an amount which aids considerably in paying their expenses,—a sum varying from \$25.00 to \$125.00 per year.

In view of the fact, however, that the amount of this work is strictly limited and that it is not the policy of the college to create such work, and, furthermore, because of the increasing number of students and the more frequent applications for student labor, it seems desirable to state the conditions under which this work will hereafter be assigned.

1. Application for work must be made on a blank which will be issued to the student on request. *Persons desiring such work must bring a statement certifying to what extent the student must depend upon himself for support.* It must be borne in mind that the student can not make this certification for himself. Application for work, however, under no circumstances creates a claim on the college that work shall be assigned the applicant.

2. At a certain time before the opening of the fall term all applications for work will be considered and appointments will be made after due consideration of

- (a) Capability for the work.
- (b) Trustworthiness.
- (c) Good record as a student.
- (d) Need for financial aid.

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[NOTE: Other things being equal, preference will be given to residents of the state, to upper-class students, and to those who room and board at the college.]

3. Such appointments are subject to revocation at any time, for
  - (a) Incompetency.
  - (b) Unfaithfulness in discharge of duty.
  - (c) Misconduct or disloyalty to the institution.
  - (d) Bad record in studies.
4. Such appointments must be recognized as
  - (a) A mark of trust and responsibility.
  - (b) A real and vital part of one's training for promptness, for initiative, and for leadership.
  - (c) One of the very best criteria the teacher has in determining his estimate of the student's character, both for his own guidance and for recommendation to employers.

5. Payment for services will vary from ten to fifteen cents per hour, according to the grade and difficulty of the work and the experience of the student. In general, students should not expect more than ten cents an hour for the first year. It is a rule of the college that any student desiring to perform more than twenty hours of student labor per week must secure permission from the faculty council. In the future, it may be necessary to limit the amount which any one student may receive for student labor.

Some young people have the impression that the college offers such opportunities for self-help that it is safe to enter with practically no funds, relying solely on money earned while here. In exceptional cases this may be done, but prospective students are strongly advised not to enter until they have at least \$100.00 at their disposal. A student who has to make his own way must also plan to work steadily during both the short and long vacations. Occasional vacation work at the college can be furnished to students, but as a rule they should look elsewhere for this class of work.

### Religious Influences.

This college is a state institution, and consequently, the widest latitude is given to all creeds and forms of religious belief. Simple chapel exercises are held on one day of each week and are conducted by the president or some other member of the faculty. It is desired and expected that all students will attend chapel.



A branch of the Intercollegiate Young Men's Christian Association is doing active work among the men students, holding a meeting every Sunday throughout the year. This association conducts courses in bible study, and is taking the lead in endeavoring to establish sound and high ideas of college life.

The Young Women's Christian Union is doing a similar work for the young women.

The village church cordially invites all students to attend its services and if possible, to join its membership. Every effort is made by the college to minister to the higher life of the students and to bring before them the noblest ideals, without in any way attempting to coerce them to particular beliefs.

### The College Lecture Association.

Faculty and students, uniting with residents of the vicinity, conduct a winter lecture course, the aim of which is to introduce talented speakers upon subjects both entertaining and instructive. The association may be looked upon as a permanent and important factor in college activities. For the season of 1911-1912, the following program was secured:

November 13. Lee Francis Lybarger, Lecture: "Land, Labor, Wealth."

December 11. The Schubert Male Quartet, assisted by Miss Marion H. Clarke, Reader.

January 4. Seumas MacManus, Lecture: "A Merry Ramble Round Ireland."

January 25. The Barleben String Quartet, of the Boston Symphony Orchestra.

March 28. Phidelah Rice, Impersonator, in "The Taming of the Shrew."

April 3. Colonel H. A. Dyer, Lecture: "An Artist's Rambles in Search of the Beautiful."

### The Library.

The library occupies two large adjoining rooms in Lippitt Hall, and numbers over seventeen thousand volumes. The books are arranged in stacks, to which the students have free access. The Dewey system of classification is used; and a dictionary catalogue



gives author, title, and subject entries. As the library has been from the first intended for reference work, the various departments of instruction have made their selections with the greatest care. In the reading-room, one hundred and twenty of the leading periodicals—of literary, scientific, and general interest—are on file. From time to time these are bound, and prove of great value in reference work.

Since the library has been a government depository twenty-five hundred books and pamphlets have been received, which are of value in scientific investigation and research.

The library is open every week day from 8:00 A. M. to 6:00 P. M., with the exception of an hour at noon. The librarian or her representative is in constant attendance, to aid any one in search of information. As the college is an institution designed to further the educational interests of Rhode Island, all residents of the state are at liberty to use the library.

### Location.

The college campus is one and one-half miles from Kingston station, which is at the junction of the main line of the N. Y., N. H. & H. R. R. with the Narragansett Pier branch, thus insuring excellent railroad accommodations. The buildings are on a hill which commands an extended view of the surrounding country—a location both healthful and beautiful. Sixteen trains stop daily at the station, so that the college is accessible from Providence or from New York City at almost any hour in the day. The ride from Providence is about forty to forty-five minutes in length. From New York the time is some four hours.

## Departments of Instruction.

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The following subjects are offered in the different departments. All subjects in the departments of instruction preceded by a Roman numeral count towards the degree of B. S. All subjects preceded by a capital letter lead to a certificate.

### Agriculture.

PROFESSOR ADAMS, PROFESSOR PUTNEY, ASSISTANT PROFESSOR COBB,  
MR. BURDICK, MR. GODIN, MR. LAMBERT.

The instruction given in this subject is grouped under the three heads—agronomy, animal husbandry, and horticulture. The aim is to give such theoretical and practical training in the fundamentals of agriculture as will enable those who take this work to fill positions of trust and responsibility, either as owners of their own farms, managers of estates, or along other lines of agricultural activity.

That the graduates from this department may be fitted to take up the work outlined above, all students registered for a degree in agriculture will be required to show certain familiarity with the ordinary operations of the farm, before such degree is given.

In order that those students who have not had an opportunity to receive training in the practical work of the farm may become familiar with some of the more common operations, they will be required, during their connection with the college, to do a certain amount of routine farm work without pay. This will include work in the dairy barn, poultry yard, greenhouses and gardens. This training will be in addition to the laboratory credits prescribed in the regular course. The amount of such work required will depend upon the efficiency shown by the student. No college credits will be given for this work, yet the neglect of this phase of the training may be considered a sufficient cause for dismissal from the institution. Students may be required to spend one or two summers upon the farms in order to get additional training. Persons taking practical work upon farms

during the summer vacations will be required to furnish a certificate from their employers, stating the time spent on the farm and the kind and amount of work accomplished. Special attention must be given to that branch of agriculture which the student is to elect during the Senior year.

### AGRONOMY.

PROFESSOR ADAMS, MR. BURDICK.

The instruction in agronomy begins the first term of the Sophomore year, when a study is made of the forage plants. Following this work are subjects dealing with the other field crops and their uses as food for man and beast. In the work with soils and fertilizers, especial emphasis is placed upon the problems connected with the proper use of chemical manures.

The business side of farm life is given attention in the subjects treating of farm equipment and management. Work with farm machinery is a laboratory course, in which the students are taught how to care for, repair, and operate modern farm machinery. In the Senior year there is instruction in plant breeding, a subject which is of the utmost importance to one who would make the most of the opportunities in crop production. Instruction in agricultural experimentation deals largely with the application of the results which have been obtained by the experiment station, to the practical problems of the farm.

The equipment of the department includes the college farm and barns; also the farm machinery, consisting of a good line of tillage implements, fertilizer distributors, grain drill, and harvesting machinery. A well-equipped blacksmith shop is also provided.

Students have the advantage of the field experiments which are being conducted by the experiment station upon fertilizer problems and with various rotations.

### Subjects.

II. Forage Crops.—History and development of the plants used for forage; silage, methods of construction of silos. *Two recitation credits per week, first term. Required of Sophomores in Agriculture.*

III. Soils and Fertilizers.—Origin and constituents of soils; texture, moisture, drainage, methods of tillage. Farm manures, artificial manures, composi-

tion and use; formulas for various crops. *Four recitation and one and one-half laboratory credits per week, first term. Required of Juniors in Agriculture. Option for Juniors in Applied Science. Prerequisite: Chemistry I and II.*

IV. Farm crops.—Origin and history; production and place in the rotation of clovers, grasses, and root crops. *Three recitation credits and one laboratory credit per week, second term. Required of Juniors in Agriculture. Option for Juniors in Applied Science. Prerequisite: Botany I and II.*

VI. Farm Machinery.—Development of farm machinery, methods of construction, function, and operation. *Two recitation credits and one laboratory credit per week, second term. Required of Juniors in Agriculture. Mr. Burdick.*

VII. Farm Management.—Discussion of agricultural methods, choice of a farm, capital, marketing, types of farming, accounts. *Two recitation credits per week, second term. Required of Juniors in Agriculture. Prerequisite: Agronomy III and IV.*

VIII. Farm Management (advanced).—Individual problems of farm management are assigned. Abandoned farms will be visited and a critical study made of the existing conditions. *Two recitation credits per week, first term. Option for Seniors in Agriculture.*

IX. Literature.—History of agricultural and horticultural literature; a study of the different types of agricultural literature as illustrated by ancient and modern authors. Reports upon special topics. *Two recitation credits per week, second term. Option for Seniors in Agriculture.*

X. Agricultural Experimentation.—Objects, methods, and results of agricultural experimentation. A study of federal and state aid to agriculture as shown in the work of the United States Department of Agriculture and the Experiment Stations. *Three recitation credits per week, first term. Required of Seniors in Agriculture.*

XI. Plant Breeding.—A discussion of the development of plants under cultivation; with reference to heredity, environment, variation, and selection. *Three recitation credits per week, first term. Required of Seniors in Agriculture. Option for Seniors in Applied Science. Prerequisite: Botany I and II.*

A. Soils and Fertilizers.—An elementary course upon the origin and nature of soils. Fertilizers; natural and artificial manures; preparation and use; fertilizer arithmetic. *Four recitation credits and one laboratory credit per week, second term. Required of Short-Course students in Agriculture, first year.*

B. Crops and Rotations.—Methods of culture and uses of the grasses, clovers, cereals, and root crops. Rotation for the various types of farms. *Three recitation credits and one laboratory credit per week, first term. Required of Short-Course students in Agriculture, second year.*

C. Farm Management.—An elementary course upon the principles of farm management, equipment, cost of production. *Four recitation credits per week, second term. Required of Short-Course students in Agriculture, second year.*



D. Farm Machinery.—Care and repair of farm implements. *One recitation and two laboratory credits per week, second term. Required of Short-Course students in Agriculture, second year.* Mr. Burdick.

## ANIMAL HUSBANDRY.

PROFESSOR PUTNEY, MR. BURDICK, MR. LAMBERT.

Instruction in animal husbandry is so arranged as to furnish practical as well as theoretical instruction in the selection, care, and management of the live stock on the farm. Instruction commences in the second term of the Freshman year, with a study of the breeds, their care, and judging of types. These courses aim to provide a large amount of practical work in combination with the theoretical. In the Junior year attention is directed to dairying; and in the Senior year the work includes advanced judging, the management of pure-bred herds, flocks, and studs, and the scientific study of feeding farm live stock.

Instruction in poultry culture is given during the second term of the Freshman year, and is both theoretical and practical. In the Senior year an option is offered in advanced poultry judging. The equipment is particularly strong on the poultry side. The college poultry plant enables one to obtain a large amount of practical experience in incubation, brooding, and management. In addition to the poultry in the college yards, the students have opportunity to follow the investigations which are now being conducted by the experiment station. In addition to the subjects mentioned below, there is a six-weeks' course in poultry keeping during the winter months, full information concerning which may be obtained by addressing the president of the college.

## Subjects.

I. Stock Judging.—Scoring and comparison of various types of horses, cattle, sheep and swine. Study of the special purpose or special type animal. *Two laboratory credits per week, second term. Required of Freshmen in Agriculture.* Professor Putney.

II. Advanced Judging.—Practice in judging and detail study of types. Herd testing methods. Tracing of pedigrees. *Two laboratory credits per week, first term. Option for Seniors in Agriculture.* Professor Putney.

III. Breeds.—History and character of the principal breeds of farm animals. Study of conditions to which each is adapted. *Two recitation credits per week, second term. Required of Freshmen in Agriculture.* Professor Putney.



IV. Principles of Breeding.—A study of the science and art of breeding. Discussion of the laws of heredity as applied to improvement of animal types. *Three recitation credits per week, second term. Required of Seniors in Agriculture. Option for Seniors in Applied Science. Prerequisite: Animal Husbandry III and Zoölogy III.* Professor Putney.

V. Management of Dairy Cattle.—This course covers the field of milk production in relation to the producer rather than to the manufacturer. It includes the building up of the dairy herd; the proper care of dairy cattle under different conditions; the dairy barn; special problems of feeding for milk production; advertising; fitting for sale and show ring. *Two recitation credits per week, second term. Option for Seniors in Agriculture.* Professor Putney.

VI. Feeding Farm Animals.—Principles of animal nutrition. Feeding standards. Making up balanced rations. *Three recitations credits per week, first term. Required of Seniors in Agriculture. Option for Seniors in Applied Science. Prerequisite: Chemistry IV and XIV.* Professor Putney.

VII. Dairy Practice.—Lectures and laboratory practice in Babcock test and in handling milk and making butter on the farm. *One recitation and one and one-half laboratory credits per week, first term. Required of Juniors in Agriculture.* Mr. Burdick.

VIII. Dairy Practice.—Advanced work. Pasteurization. Starters. Testing for adulteration. Acidity. Moisture. *One recitation and two laboratory credits per week, second term. Option for Seniors in Agriculture.* Mr. Burdick.

IX. Research and Literature.—*Hours to be arranged, first term. Option for Seniors in Agriculture.* Professor Putney.

X. Veterinary Medicine.—Combating disease from the farmer's standpoint. Obstetrics. Injuries. *Three recitation credits per week, second term. Required of Seniors in Agriculture. Prerequisite: Zoölogy III.* Professor Putney.

XI. Farm Buildings.—Plans, location, and estimate on the various farm buildings. *Two laboratory credits per week, second term. Option for Juniors in Agriculture, and Seniors in Applied Science.*

XII. Poultry Craft.—A brief study of breeds, care, and management of all classes of fowls. *One laboratory credit per week, second term. Required of Freshmen in Agriculture. Option for Seniors in Applied Science.* Mr. Lambert.

XIII. Judging Poultry.—Practice in scoring and judging all classes of fowls. *Two laboratory credits per week, second term. Option for Seniors in Agriculture.* Mr. Lambert.

XIV. Poultry Husbandry.—Special subjects to be assigned. *At least two laboratory credits per week, throughout the year. Option for Seniors in Agriculture.* Mr. Lambert.

XV. Management of Beef Cattle and Horses.—During the first nine weeks the course will cover practical methods of beef production. Studies will be made of successful practices in feeding for the market as well as advertising, fitting for sale and show ring, and the general care and management of beef cattle. During

the last nine weeks, similar studies will be made in horse production, including market classes of horses, their production and utility, and successful methods of handling and training horses. *Two recitation credits per week, first term. Option for Seniors in Agriculture.* Professor Putney.

XVI. Management of Sheep and Swine.—During the first nine weeks the best systems of sheep husbandry will be studied. This will include rearing for mutton and wool; production of spring lambs; fattening sheep and lambs for market; general care and management of the breeding flock; advertising, fitting for sale and the show ring. During the last nine weeks similar studies will be made in pork production, including a study of foodstuffs with reference to their adaptability to pork production. *Two recitation credits per week, second term. Option for Seniors in Agriculture.* Professor Putney.

A. Breeds.—Breeds of horses, cattle, sheep, and swine. Emphasis is placed on the type best fitted to the agriculture of New England. *Two recitation credits per week, first term. Required of Short-Course students in Agriculture, first year.* Professor Putney.

B. Stock Judging.—Judging of the various classes of animals and their adaptability to different purposes, as cattle for milk or beef production, horses for driving or draft. *Two laboratory credits per week, first term. Required of Short-Course students in Agriculture, first year.* Professor Putney.

C. Dairy Practice.—Babcock test for dairy products, production of sanitary milk, and butter making. *One recitation and two laboratory credits per week, first term. Required of Short-Course students in Agriculture, second year.* Mr. Burdick.

D. Stock Feeding.—Principles of nutrition. Compounding rations. *Three recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.* Professor Putney.

E. Principles of Breeding.—A study of the selection of animals, heredity, and variation. *Two recitation credits and one laboratory credit per week, second term. Required of Short-Course students in Agriculture, second year.* Professor Putney.

F. Poultry Breeds and Care.—A study and comparison of the different breeds of poultry, care of incubators and brooders, methods of feeding for the production of meat and eggs. *One recitation and one laboratory credit per week, throughout the year. Required of Short-Course students in Agriculture, second year.* Mr. Lambert.

G. Care of Animals.—Housing, care, and management of farm animals. Practical directions for handling of stock on the farm. *Two recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.* Professor Putney.

## HORTICULTURE.

ASSISTANT PROFESSOR COBB, MR. GODIN.

The aim of the instruction in horticulture is to help the student to understand the practical and scientific problems which arise in the various lines of work included under this subject.

The headquarters of the department are in the horticultural building. The main building contains the office and recitation rooms, together with photographic rooms. Attached to this building are greenhouses of modern construction, containing over 8,000 square feet under glass, 3,000 square feet of which is used by the experiment station for fertilizer experiments. The remainder is devoted to college work, and thus affords an excellent opportunity to become familiar with the growth of plants under glass. The land devoted to the department comprises the college gardens; and the fruit orchards, containing over 150 varieties of fruit, which afford an excellent opportunity for the study of apples and pears especially. There is also a small vineyard. A collection of flowering shrubs enables the student in landscape gardening to study, in the natural state, the material used in this work.

### Subjects.

I. Propagation of Plants.—Different methods, including seed testing. Soft, green, and hardwood cuttings. Layering, grafting, and budding. *One recitation and one laboratory credit per week, first term. Required of Freshmen in Agriculture and Applied Science.*

II. Vegetable Gardening.—Underlying principles and types of vegetable gardening; study of individual crops; text-book work. *Two recitation credits per week, first term. Required of Sophomores in Agriculture. Option for Juniors in Applied Science.*

III. Fruit Culture.—Fundamental principles of orcharding; soil, fertilizer, and cultivation. Methods of laying out orchards and planting. Tillage, pruning and spraying. Harvesting and storing fruits. Collateral reading and practical work. *Two recitation credits per week, first term. Required of Juniors in Agriculture. Option for Juniors in Applied Science.*

IV. Spraying and Pruning.—Preparation and application of spray mixtures; insecticides and fungicides. Methods of application for different orchard enemies, and machinery used. Pruning of trees and ornamental shrubs. *One recitation and one laboratory credit per week, second term. Required of Freshmen in Agriculture. Option for Juniors in Applied Science.*

V. Greenhouse Construction and Management.—Study of the different types of glasshouse structures; methods of heating and ventilating. *One recitation and two laboratory credits per week, second term. Option for Seniors in Agriculture.*

VI. Floriculture.—History of floriculture. Study of greenhouse plants, collectively and individually; practical work in propagation, potting, watering, ventilating, fumigating, and spraying. Study of bulbs, bedding plants; palms and ferns. *One recitation and one laboratory credit per week, second term. Option for Seniors in Agriculture and Applied Science.*

VIII. Literature of Horticulture.—See Agronomy IX.

IX. Assigned Work.—Special subjects chosen by the student. *Option for Seniors in Agriculture. Hours to be arranged.*

X. Varieties of Fruits.—Orchard and bush fruits. Study of types; origin, and history; classification, description, and methods of handling. Orchard management. *Two recitation credits and one laboratory credit per week, first term. Option for Seniors in Agriculture. Prerequisite: Horticulture III.*

XI. Advanced Vegetable Gardening.—Study of one or more crops selected by student. Practical work, research work, and text-book. *One recitation credit per week, first term. Option for Seniors in Agriculture.*

XII. Plant Breeding.—See Agronomy XI.

XIII. Landscape Gardening.—Origin, history, and underlying principles. Practical work in the laying out of grounds, formation of walks and drives; methods of planting for different effects; home planting. *Two recitation credits and one laboratory credit per week, throughout the year. Required of Seniors in Agriculture. Option for Seniors in Applied Science. Prerequisite: Botany I and II.*

XIV. Arboriculture.—Study of ornamental trees, shrubs, and other plants, both native and exotic, which are used in landscape gardening. This course is designed to enable the student to become familiar with the character, habit and adaptation of ornamental plants. *One recitation and one laboratory credit per week, first term. Option for Seniors in Agriculture.*

XV. Tree Surgery.—A study of methods used in treating diseases of trees and shrubs. Treatment of insect injuries, preventive and remedial measures to be used in case of neglect, and mechanical injuries, such as chaining and bolting. Cement filling of cavities. *One recitation and two laboratory credits per week, second term. Option for Seniors in Agriculture.*

A. Vegetable Gardening.—Fundamental principles of vegetable growing. Practical work in cold frames, hotbeds, and garden planting. *Two recitation credits and one laboratory credit per week, second term. Required of Short-Course students in Agriculture, second year.*

B. Fruit Culture.—Study of fruits; propagation; planning fruit gardens and plantations; harvesting and packing; care. *Three recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.*

C. Nursery Practice.—Propagation by seed, cuttings, grafting, budding, starting, and care of nursery. Selection of stock, and initial pruning. *One recitation and one laboratory credit per week, second term. Required of Short-Course students in Agriculture, first year.*

D. Floriculture.—Propagation of flowering plants, care of window gardens, design of flowerbeds and borders. *Two laboratory credits, second term. Required of Short-Course students in Domestic Science, first year.*

E. Spraying and Pruning.—A study of the methods used in combating insect pests and plant diseases. Preparation and application of fungicides and insecticides. Study of nozzles, pumps, etc. *One recitation and one laboratory*



*credit per week, second term. Required of Short-Course students in Agriculture, second year.*

F. Home Grounds.—A study of the materials to use, the essential principles of the art. Practice in designing, planting, and care of home grounds. *Two recitation credits per week, second term. Required of Short-Course students in Agriculture, second year.*

## Botany.

PROFESSOR MERROW, MR. MILES.

The aim of the department is to give a general knowledge of plant life, followed by subjects of an economic nature. The college is well located for carrying on this line of work. The native flora is extensive, and an abundance of material is furnished by the cultivated plants of the gardens and fields of the college farm. The green houses supply fresh material for winter use, and the herbarium of 4,500 specimens is a useful reference collection. The laboratory is equipped with dissecting and compound microscopes, a microtome, paraffin bath, and simple physiological apparatus. Charts and models are provided for lecture demonstrations. A good working library, including several American and foreign periodicals, is an important factor in the outfit for botanical instruction.

## Subjects.

I. General Botany.—A study of common plants, their structure, physiology evolution, and adaptation to environment. The work includes a brief study of molds, yeasts, and bacteria, designed as an introduction to problems in which these organisms play a part. *Two laboratory credits and one recitation credit per week, throughout the year. Required of Freshmen in Agriculture, Applied Science, and Home Economics.*

II. Economic Botany.—The systematic botany of crops and weeds. *Two laboratory credits and one recitation credit per week, first term. Required of Sophomores in Agriculture and Applied Science.*

III. Trees and Shrubs.—The determination of native and introduced trees and shrubs in summer and winter condition. *One laboratory or field credit per week, throughout the year. May be elected by students having a minimum of six credits in Botany.*

IV. Forestry.—The management of New England wood lots. *Two credits per week, second term. Given in alternate years, 1912, 1914. Required of Juniors or Seniors in Agriculture. Elective in Applied Science. Mr. Miles.*

V. Histology.—Seed plants are studied by the usual histological methods of imbedding, sectioning, and staining. *Four laboratory credits and one recitation credit per week, first term. Elective.*



VI. Pathology.—Diseases caused by parasitic fungi and the remedies for them. *Four laboratory credits and one recitation credit per week, second term. Elective.*

VII. Assigned Work.—*Three credits throughout the year. Elective for Seniors in Applied Science and Agriculture.*

A. Plant Life.—Elementary agricultural botany. *Two laboratory credits and one recitation credit per week, throughout the year. Required of Short-Course students in Agriculture and Domestic Science, first year.*

## Chemistry.

DR. LEIGHTON, MR. SMITH, DR. HARTWELL.

Instruction in this department begins in the Freshman year with experimental lectures, recitations, and laboratory practice in general and descriptive chemistry. The work is designed to give a thorough elementary knowledge of theoretical and descriptive inorganic chemistry, including the principal technical processes, and a brief account of the carbon compounds. As much attention as is practicable in a general course is given to the applications of the science to the problems of life. Two periods per week for the first half-year and three for the second half-year are devoted to the lectures and recitations, and three hours per week for a half-year to the practical work in the laboratory, where the student has an opportunity to verify some of the chemical theories and to become familiar with substances and their chemical behavior. During the second half of this year the laboratory period is devoted to qualitative analysis, which continues through the first half of the Sophomore year. The subject is taught in part by means of recitations and lectures, but mainly by work in the laboratory. Students are required to complete a systematic course in basic and acid analysis, and to analyze correctly a number of alloys, salts, and minerals.

Quantitative analysis is taught mainly by laboratory practice, but sufficient time is devoted to lectures and recitations to teach thoroughly the fundamental principles involved. The work comprises gravimetric and volumetric analysis, and the quantitative determination of salts, alloys, ores, minerals, and commercial and food products. In the course in technical gas analysis the student analyzes such gases as air, and illuminating and chimney gases. The work in assaying is designed to familiarize the student with the practical methods of sampling and assaying gold, silver, and lead ores. Determinative mineralogy, which includes blow-pipe analysis and crystal-

lography, is taught by recitations and laboratory work. The student learns the physical properties of the common minerals, and their identification. The above subjects cover a comprehensive study of analytical chemistry, and are intended to give the student such theoretical and practical knowledge as to prepare him for analytical work of any kind.

The study of organic chemistry begins with a short course, designed to cover the general principles and methods, and to include a description of the more important compounds. The subject is continued by those who wish to specialize in chemistry in a more extended course covering the aromatic series and the chemistry of the dyestuffs, and accompanied by laboratory work in organic preparations and analysis. The theoretical and basic principles of chemistry, with their general application, are thoroughly studied by recitation, lectures, and laboratory work in the course in physical chemistry.

The descriptive side of industrial chemistry, which comprises a general survey of the technical applications of chemical principles to the arts and industries, is studied by recitation work; while practical technical operations, such as textile coloring, suited to the needs of the individual student, are studied by laboratory practice. The principles and practice of the industrial preparation of iron, steel, and other metals from their ores are taught by recitation and lecture work in the course in metallurgy.

Agricultural chemistry, required of agricultural students in the Junior year, embodies the chemistry of soils and fertilizers, also the chemistry involved in the changes which take place during the growth of animals and plants, as well as in the storage or manufacture of the ordinary farm products.

Subject XXI is intended to familiarize the student with the general field of chemical literature, and to inculcate the habit of keeping up with the recent advance in chemical science by reports and discussion of articles appearing in the chemical journals. This course is preparatory for Subject XX, which involves original investigation.

The laboratory is supplied with water, gas, and compressed air at each desk; it is also well equipped with apparatus for the subjects mentioned below. Among the more important pieces of apparatus are a polariscope, microscope, sodium press, hot-air engine, five analytical balances, one assay balance, filter press, Wheatstone bridge, combustion furnace, bomb furnace, assay muffle, crucible and roasting furnaces, ore crusher and grinder.

A good working library, containing a large number of German, French and English chemical journals, is also accessible.

### Subjects.

I. General Chemistry.—*Two recitation and one and one-half laboratory credits per week, first term. Required of Freshmen in all courses. Mr. Smith.*

II. General Chemistry and Qualitative Analysis.—*Three recitation and one and one-half laboratory credits per week, second term. Required of Freshmen in all courses. Dr. Leighton.*

III. Qualitative Analysis.—Basic and acid analysis; analysis of salts, industrial and natural products. *Three laboratory credits per week, first term. Required of Sophomores in all courses. Dr. Leighton.*

IV. Organic Chemistry.—*Three recitation credits and one laboratory credit per week, second term. Required of Sophomores in Chemical Engineering, Home Economics, Agriculture, and Applied Science. Elective for others who have completed Chemistry III. Mr. Smith.*

V. Organic Chemistry (advanced).—*To be given alternate years. Given next in 1913. Three recitation credits and one laboratory credit per week, first term. Required in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry IV. Dr. Leighton.*

VI. Organic Chemical Laboratory.—*Three laboratory credits per week, second term. Required of Juniors in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry IV. Mr. Smith.*

VII. Quantitative Analysis.—Gravimetric and volumetric analysis. Analysis of minerals, ores, alloys, and industrial products. *Three laboratory credits per week, first term. Required of Juniors in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry III. Mr. Smith.*

VIII. Quantitative Analysis.—*Four and one-half laboratory credits per week, second term. Required of Juniors in Chemical Engineering and Juniors who take the Chemical Option in Applied Science. Elective for those who have completed Chemistry III. Three laboratory credits per week, first term. Required of Seniors in Chemical Engineering. Mr. Smith.*

X. Quantitative Analysis.—Food Analysis. *Four laboratory credits, first term. Required of Seniors in Home Economics. Elective for others who have completed Chemistry IV. Mr. Smith.*

XI. Determinative Mineralogy.—*One and one-half laboratory credits per week, second term. Required of Juniors in Chemical Engineering and of Juniors who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry III. Mr. Smith.*

XII. Physical Chemistry.—To be given alternate years. Given next in 1912. *Three recitation credits and one laboratory credit per week, first term. Required in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry III.* Dr. Leighton.

XIII. Metallurgy.—*Two recitation credits per week, second term. Required of Seniors in Chemical Engineering. Elective for others who have completed Chemistry II.* Mr. Smith.

XIV. Agricultural Chemistry.—*Three recitation credits and one laboratory credit per week, first term. Required of Juniors in Agriculture. Prerequisite: Chemistry (I-IV).* Dr. Hartwell.

XV. Gas Analysis.—See Mechanical Engineering XV.

XVI. Industrial Chemistry.—*Four recitation credits per week, second term. Required of Juniors in Chemical Engineering and of Seniors who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry, IV.* Mr. Smith.

XVII. Industrial Chemistry.—The work under this subject may be varied to suit the needs of individual students; including such subjects as technical analysis and textile coloring. *Three laboratory credits per week, second term. Required of Seniors in Chemical Engineering and of Seniors who take the Chemical Option in Applied Science. Elective for those who take Chemistry XVI.* Dr. Leighton.

XVIII. Assaying.—*Two laboratory credits per week, second term. Required of Seniors in Chemical Engineering.* Mr. Smith.

XIX. Physiological Chemistry.—*Four credits per week, second term. Required of Juniors in Home Economics.* Dr. Leighton.

XX. Assigned Work.—*Three credits per week, throughout the year. Required of Seniors in Chemical Engineering and Seniors who take the Chemical Option in Applied Science.* Dr. Leighton.

XXI. Reports and Discussion of Chemical Subjects and Recent Investigations.—*One credit per week, throughout the year; required of Juniors and Seniors in Chemical Engineering. Option for Juniors and Seniors in Applied Science.* Dr. Leighton.

XXII. Electro-Chemistry.—*Three credits per week, second term. Required of Seniors in Chemical Engineering and of Seniors who take the Chemical Option in Applied Science.* Dr. Leighton.

A. Chemistry of Plant and Animal Life.—*Three recitation credits and one laboratory credit per week, throughout the year. Required of Short-Course students in Agriculture and Domestic Science, second year.* Mr. Smith.

## Freehand Drawing.

MISS ELDRED.

The aim of the subjects described below is to supply the practice in drawing necessary for subsequent work in the science laboratories,



to give an elementary knowledge of the history of art, and to develop some appreciation of the beautiful in art and nature. For the first term, the work comprises outline drawing in pencil, mainly from plant and animal forms. The work of the second term includes some consideration of perspective and of the principles of design. In the first term of the Sophomore year the home economics students consider the subject of color,—the principles of color harmony, and the use of color in design and decoration. The object of this work is to develop appreciation of color and to enable the student to exercise a more intelligent and sensitive discrimination in its use. In the Junior year, special work is arranged for the first term to accompany and illustrate the home economics course, treating of the arrangement and decoration of the house. The brief course in the history of art aims to give some familiarity with the greatest achievements of past and present in architecture, sculpture, and painting. The department has a considerable equipment of illustrative material for this work, including a collection of about one hundred and fifty casts and over three hundred photographs of folio or larger size, with many smaller prints, among them two thousand University Prints, illustrating Greek and Roman sculpture, and the art of Italy, Germany, and the Netherlands.

### Subjects.

II. Pencil Drawing from Objects.—*One laboratory credit per week, first term. Required of Freshmen in Agriculture. One laboratory credit per week, throughout the year. Required of Freshmen in Applied Science and Home Economics. Five laboratory credits per week, first term. Elective for Freshmen.*

III. History of Art.—*Two recitation credits per week, second term. Required of Juniors in Home Economics. Two recitation credits per week, first term. Required of Seniors in Home Economics.*

IV. Color Problems.—*One laboratory credit per week, first term. Required of Sophomores in Home Economics.*

V. Drawing in Charcoal from Still Life and the Cast.—*Two laboratory credits per week, second term. Elective.*

VI. Pen-and-ink Drawing, Water-Color, or Pastel.—*Two laboratory credits per week, second term. Elective.*

VII. Modeling.—*Two laboratory credits per week, second term. Elective.*

VIII. Work Illustrating Home Economics VII.—*One laboratory credit per week second term. Required of Juniors in Home Economics.*

IX. History of American Art.—*One recitation credit per week, second term. Elective.*



## Economic and Social Science.

PRESIDENT EDWARDS.

### Subjects.

I. Political Economy.—Text-book, supplemented by lectures, reading, and essays. *Four recitation credits per week, first term, first twelve weeks. Required of Seniors in all courses.*

II. Agricultural Economics.—The study of agriculture as an industry, from the point of view of political economy. Includes a study of the agricultural market; transportation of agricultural products; agricultural labor; farm ownership and tenancy; mortgages, etc. *Elective.*

III. Rural Sociology.—Movements of the farm population—causes and results; general social conditions of farmers, such as illiteracy, health, crime, etc.; personal and social traits developed by rural life; means of communication in rural communities; the rural school; agricultural education; the country church; farmers' organizations; federation of rural social forces. *Elective.*

## Home Economics.

PROFESSOR THOMPSON.

The aim of this department is to give both theoretical and practical training in the economic administration of the home. The laboratory is situated in a building by itself, which is finished and furnished in such a manner as to demonstrate the sanitary principles involved in proper kitchen arrangements. It is amply equipped with the most recent scientific cooking-apparatus, inclusive of thermometers, metric scales, different kinds of stoves, and individual utensils. The work in chemistry, biology, etc., is, however, carried on in the laboratories of those departments. There is a good home economics library, and students are expected to make intelligent use of the main library in reference work, as well as to study those bulletins of the Department of Agriculture and such state reports as deal particularly with the subjects of food and nutrition.

### Subjects.

I. Domestic Art.—A course in hand sewing; different kinds and combinations of stitches; drafting and cutting of patterns; machine practice; study of charts and tailoring systems; making of two undergarments and an unlined dress. *One laboratory credit per week, first term; and two laboratory credits per week, second term. Required of Freshmen in Home Economics.*

II. Elementary Cookery.—The economic use of fuels; the management of stoves and ranges; the study of cooking temperatures and processes; the care of utensils; practice in the cookery of a few typical foods. *One recitation and one laboratory credit per week, second term. Required of Freshmen in Home Economics.*

III. a. Personal Hygiene.—This course considers the aim of personal hygiene as the maintaining of the most efficient human machine for the life needs of the individual. It endeavors to give and establish ideals of health and efficiency. *One recitation credit per week, first term. Required of all women Freshmen.*

III. b. Euthenics.—The following topics are considered: environment of human life; problems of adaptation to modern conditions and progress; personal aim; individual responsibility; factors in human efficiency. *One recitation credit per week, second term. Required of all women Freshmen.*

IV. Foods.—A systematic study is made of the food constituents, their sources, chemical composition, properties, nutritive and economic values. This course is accompanied by laboratory practice in the preparation of many representative foods. Class demonstrations are given from time to time. *Three recitation and one and one-half laboratory credits per week, first term; two recitation and one and one-half laboratory credits per week, second term. Required of Sophomores in Home Economics. Prerequisites: Chemistry I, II, Home Economics II.*

V. Household Methods and Management.—Lectures and discussions upon general housework, the principles of laundering, marketing, apportionment of income, maintenance of standards, household administration, social, legal, industrial, and educational problems of the family. *Two recitation credits per week, first term. Required of Sophomores in Home Economics.*

VI. Human Nutrition.—Composition of the animal body and its daily food requirements; methods of investigation employed in studying the nutritive function of foods; the changes affected by cooking and by the processes of digestion; balancing of dietaries; food economy. *Three recitation credits per week, first term. Required of Juniors in Home Economics. Prerequisite: Chemistry IV, Zoölogy III, Home Economics II, IV.*

VII. Home Decoration.—A study of the evolution of the house; its adaptation to modern conditions; the principles to be followed in planning, furnishing, and decorating the house from a sanitary and artistic standpoint. *Two recitation credits per week, first term. Required of Juniors in Home Economics.*

VIII. Dietetics.—Problems in nutritive ratios; the balanced dietary; hygienic combinations of foods; construction of menus; adaptation of the diet to age, occupation, and different climatic conditions. *One recitation and one laboratory credit per week, second term. Required of Juniors in Home Economics. Prerequisite: Home Economics VI.*

IX. Sanitation.—This course deals with household and public hygiene. Study of health and the causes of disease; vital resistance; susceptibility and immunity; infection and contagion; pollution of food and water supplies; prevention and inhibition of infection, decomposition and decay. *Two recitation credits per week, second term. Required of Juniors in Home Economics.*

X. Food Preservation.—Study of the processes of decomposition, fermentation, and putrefaction; practice in preserving foods by drying, salting, and sterilization; preparation of jelly, pickles, and canned fruits; discussion of commercial preservatives. *One laboratory credit per week, first term. Required of Seniors in Home Economics. Prerequisite: Home Economics IX.*

XI. Hygiene and Care of Children.—A study of the physical development of children; care of infants and young children; school hygiene. *Two recitation credits per week, first term. Required of Seniors in Home Economics. Prerequisite: General Psychology. Open to Juniors and Seniors in other courses.*

XII. Home Nursing.—Care of the sickroom and patient; administration of medicines; recording of symptoms; accidents and emergencies; hygiene of infectious diseases; antiseptics and disinfectants. *Two recitation credits per week, second term. Required of Seniors in Home Economics. Prerequisite: Home Economics IX.*

XIII. Therapeutic Cookery.—This course includes the study of abnormal conditions of digestion and metabolism, relation of food to specific diseases, cookery for the sick and convalescent. *One recitation and one laboratory credit per week, second term. Required of Seniors in Home Economics. Prerequisite: Home Economics IV, VI, VIII, X.*

XIV. Assigned Work.—This may be a problem in the biological, chemical, physiological, or economic aspect of the work in Home Economics. *Three recitation and two laboratory credits per week, second term. Required of Seniors in Home Economics.*

XV. Teaching of Home Economics.—Purpose and method of the work; courses of study, equipment, etc. *One recitation credit per week, second term. Elective for Seniors in Home Economics.*

XVI. History of Home Economics.—Development of home economics movement; a study of the work as presented in different types of institutions, and its industrial, educational, and sociologic aspects. *One recitation credit per week, first term. Elective.*

XVII. Textiles.—A study of fabrics; processes and appliances studied with reference to their historic development; primitive industries; modern processes of manufacture; dyeing, spinning, and weaving. *Two recitation credits per week, second term. Elective. Prerequisite: History I, Home Economics I.*

XVIII. Dressmaking and Tailoring.—*Three laboratory credits per week, second term. Elective for students who have completed Home Economics I.*

XIX. Food Products.—Production, manufacture, and marketing of foods; factors affecting cost. *Two recitation credits per week, first term. Elective.*

XX. A Study of the Family.—Development of the domestic institutions; social ethics of the family; legal, industrial, and educational problems of the household. *Two recitation credits per week, second term. Prerequisite: Home Economics V. Elective.*

## DOMESTIC SCIENCE.

A. Household Technique.—This course is planned to give a knowledge of the processes involved in household work. It deals with the handwork of cooking and cleaning; care of rooms, table setting and serving, etc. *Two recitation credits per week, first term, first year. Required of Short-Course students in Domestic Science.*

B. Sewing.—Hand sewing; use of machine; drafting of patterns. *One laboratory credit, first term, first year. Required of Short-Course students in Domestic Science.*

C. Food.—Study of the five food principles and their nutritive and physiological functions; practice in the cookery of vegetables, cereals, fruits, milk, eggs, and meats. *Three recitation and one and one-half laboratory credits per week, second term, first year. Required of Short-Course Students in Domestic Science.*

D. Dietetics.—Provides instruction in advanced cooking; special cooking for sick and convalescent; planning of meals; discussion of dietaries. *Three recitation and one and one-half laboratory credits per week, first term, second year. Required of Short-Course students in Domestic Science.*

E. Management of the House.—Considers the materials, qualities, amounts, and cost of house furnishing and supplies; lessons in marketing. *One recitation credit per week, second term, second year. Required of Short-Course students in Domestic Science.*

F. Hygiene.—Study of the living machine, its mechanism and functions; the right use and proper care of the human mechanism; home nursing and emergencies. *One recitation credit per week, second term, second year. Required of Short-Course students in Domestic Science.*

G. Textiles.—Study of the clothing fabrics; dressmaking. *One and one-half laboratory credits per week, second term, second year. Required of Short-Course students in Domestic Science.*

## Psychology and Education.

DR. SECHRIST, ASSISTANT PROFESSOR SPENCER.

The courses in education provide instruction in the theory of the subject as derived from general and educational psychology, and the history of education, besides giving the practical point of view in connection with the work in secondary education. As a part of this work visits are made to representative high schools convenient to the college for the purpose of studying the administrative and instructional phases of secondary education with special reference to the courses in science.

I. History of Education.—Study of educational theory and practice from the historical point of view with special reference to modern scientific and industrial education. *Three recitation credits per week, first term. Required of Seniors in Applied Science and Home Economics.*



II. Psychological Principles of Education.—Study of the principles of teaching from the psychological point of view. *Two recitation credits per week, first term. Required of Seniors in Applied Science. Prerequisite: General Psychology.*

III. Secondary Education.—Principles of teaching, with special reference to the aims of the secondary school; organization, management, and method in the high school. *Two recitation credits per week, second term. Required of Seniors in Applied Science. Prerequisite: Psychology and Education II and IV.*

IV. General Psychology.—Structure and functions of mental life. Study of text-book is supplemented with experiments and with lectures on the practical applications of psychology. *Three recitation credits per week, first term. Required of Juniors in Applied Science and Home Economics.*

V. Ethics.—Study of ethical principles, with special reference to the problems of individual and social life. *Two recitation credits per week, second term. Elective for Seniors in Home Economics.*

VI. Esthetics.—Study of esthetic principles from the psychological point of view. *Two recitation credits per week, second term. Elective for Seniors in Home Economics. Prerequisite: Psychology and Education IV.*

VII. Sociology.—Text-book work and assigned readings. *Three recitation credits per week, second term. Required of Seniors in Home Economics.*

## Mechanical Engineering.

PROFESSOR WALES, MR. ELDRED, MR. EAMES, MR. PEASLEE.

It is the object of the work in the department of mechanical engineering to turn out broad-gauged, self-dependent men, well trained in engineering theory, familiar with the practical matters of construction and operation, and having some knowledge of the economic relations which the engineer and industrial development bear to modern society. In the endeavor to train men who will touch life, not at one point, but at many, the work of the department is supplemented and rounded out by extended and vigorous courses along the lines of electrical engineering, physics, mathematics, chemistry, English, history, modern languages, and political economy. The special work of the department of mechanical engineering divides itself naturally into the following general groups: shop practice, design, steam engineering, and experimental engineering. Each of the above groups is amplified and briefly described below:

### SHOP PRACTICE.

The object of this work is to give familiarity with principles, operations, possibilities, and management, rather than to develop the greatest dexterity in manipulation. Shop practice extends over three years of the course, and comprises forging and foundry work, pattern



making, and machine-tool operation. The shops are exceptionally well equipped with machines and tools of all kinds. In the machine shop are six metal lathes, speed lathes, planes, 16-in. shaper, two drills, two tool grinders, drill grinder, milling machine, punching-press, vertical boring and turning mill, together with the usual assortment of tools and auxiliaries. The pattern shop is provided with lathes, circular saw, band saw, jig saw, dowel machine, surface and buzz planers, etc. Fifteen work-benches fully provided with the small tools of the pattern maker complete the equipment. The forge shop is equipped with the usual anvils, forges, fullers, swages, hardies, etc., while a full stock of patterns, shovels, riddles, flasks, and trowels is provided for the work in foundry practice. Enthusiasm is given to the work by the construction of things of real value—a new machine for the shop or a piece of apparatus for the laboratory—instead of spending the whole time on worthless “exercises.”

#### DESIGN.

The work along the lines of design extends throughout the four years, beginning with freehand and mechanical drawing and ending with machine design and power-plant design in the Senior year. Leading up to this final work are the terms of mechanical drawing, descriptive geometry, mechanism, valve gears, dynamics of machines, mechanics, strength of materials, hydraulics, and thermo-dynamics. All the forces of correct theory and the practice of the most successful builders are brought to bear upon the solution of definite, practical problems.

#### STEAM ENGINEERING.

Steam engineering begins in the Junior year and runs through the remainder of the course. A rigorous study of the mathematical theory of thermo-dynamics supplies the foundation for the study of boilers and engines, design and economy, and the various devices and auxiliaries of the power plant. In the Senior year is considered the particular branch of heating and ventilating. In this year, also, the subject of power plants is taken up, which applies all the previous training in steam engineering, and which brings together and unifies all allied subjects.

#### EXPERIMENTAL ENGINEERING.

This subject, which extends throughout the Junior and Senior years, is intended to fix the theory developed in all the other lines

of work. Instruction is given by means of lectures and laboratory tests. The student becomes familiar with the theory, construction, use, and calibration of the instruments and apparatus used by the engineer, and gains experience in making accurate standard and special tests. The work is divided into four groups: one dealing with the chemical problems of engineering—testing of gases, oils, fuels, feed water, etc.; a second, with general calibration and testing; a third, with the study and tests of structural materials; and the fourth, with general power-plant testing. In power-plant testing the students make the necessary plans and preparations, perform the experimental work, and prepare formal reports, with recommendations for improvement in economy, etc. These tests are made not only on the college power-plants, but on those of manufacturing establishments of the state. The equipment for experimental work comprises several boilers and steam engines, large steam pump, gas engines, feed-water heaters, several steam and gas engine indicators, steam calorimeters, tanks, scales, injectors, water turbine, hydraulic ram, pulsometer, centrifugal pump, belt pump, weirs, two-stage air compressor, air-brake outfit, meters, gauges, 50,000-lb. tension and compression machine, apparatus for oil and gas testing, fuel calorimeter, complete outfit for testing cements and concretes, etc. Throughout the work the greatest stress is laid upon the correct calculation and interpretation of results, and accuracy and self-dependence are developed to the fullest.

### Subjects.

I. Mechanical Drawing.—Lettering, freehand sketching, use of drafting tools, geometrical problems, projections, machine parts. *Three laboratory credits per week, first term; two laboratory credits per week, second term. Required of Freshmen in Engineering. One and one-half laboratory credits per week, first term. Required of Juniors in Home Economics.* Mr. Eames.

II. Forge and Foundry.—Forging, drawing, bending, welding, etc. Principles of moulding, core making, and casting. *Three laboratory credits per week, first term. Required of Freshmen in Engineering and Short-Course students in Engineering, first year.* Mr. Eldred.

III. Pattern Making.—Use of tools, bench and lathe work, pattern making. *Three laboratory credits per week, second term. Required of Freshmen in Engineering and Short Course students in Engineering, first year.* Mr. Eldred.

IV. Graphic Statics.—Force and funicula polygons with applications in the determination of stresses in framed structures. *Two recitation credits per week, second term. Required of all Sophomores in Engineering.* Mr. Eames.

V. Descriptive Geometry.—Elementary principles; problems relating to the point, line, plane, cylinder and double curved surfaces of revolution, intersections,

and developments. *One recitation and two laboratory credits per week, first term. Required of all Sophomores in Engineering.* Mr. Eames.

VI. Mechanical Drawing.—Detail and assembly drawings, elementary machine design. *Three laboratory credits per week, second term. Required of Sophomores in Mechanical, Electrical, and Civil Engineering.* Mr. Eames.

VII. Machine Shop.—Hand work in chipping and filing, use of machine tools, construction of machines. *Three laboratory credits per week, second term. Required of Sophomores in Electrical Engineering. Three laboratory credits per week, throughout the year. Required of Short-Course students in Engineering, first year. One and one-half laboratory credits per week, second term. Required of Sophomores in Civil Engineering.* Mr. Eldred.

VIII. Machine Drafting.—Technique of machine drafting, application of kinematics to the design of gears, valves, linkages, quick-return motions, etc. *Three laboratory credits per week, first term. Required of Juniors in Mechanical Engineering.* Mr. Eames.

IX. Heat Engineering.—Thermo-dynamics.—Mathematical development and discussion of the laws of thermo-dynamics, and their application to perfect gases, saturated and superheated steam. Theory of air compressors, pneumatic machinery, hot-air engines, gas engines, and refrigerating machines. Boilers, engines, engine economy, effect of cylinder walls, compounding, superheating, use of jackets, varying cut-off, speed, pressure, etc. Flow of fluids, injectors, and thermo-dynamic principles applied to the steam turbine. *Three recitation credits per week, throughout the year. Required of Juniors in Mechanical and Electrical Engineering; and for twenty-seven weeks, of Juniors in Chemical Engineering.* Professor Wales.

X. Applied Mechanics.—Forces, composition and resolution, parallel forces, moments, couples, centres of gravity, velocity, acceleration, energy and momentum, falling bodies and projectiles, centrifugal force, moment of inertia, radius of gyration, angular momentum, energy of rotating bodies, impact, etc. Strength of material, stresses in structures, riveted joints, beam theory, struts, columns, shafting, springs, etc. Solution of practical problems. Text, Lanza's Applied Mechanics. *Five recitation credits per week for twenty-four weeks. Required of Juniors in Mechanical, Electrical, and Civil Engineering, and of Juniors in Chemical Engineering for the first term.* Professor Wales.

XI. Hydraulics.—General principles, head and pressure, center of pressure, velocity of discharge, flow through orifices and over weirs, Bernouilli's theorem, flow through pipes, flow through conduits and canals, energy of flow, horse-power, hydraulic machinery, rams, turbines, centrifugal pumps, and Pelton wheels. Merriman's Treatise on Hydraulics. *Five recitation credits per week, for last twelve weeks of second term. Required of Juniors in Mechanical, Electrical, and Civil Engineering.* Professor Wales.

XII. Mechanism.—Instantaneous centers, centroids, lobed wheels, belts, pulleys, four-bar linkages, graphical determination of velocity ratios, quick-return motions, straight-line motions, pantographs, trains of gears, epicyclic trains, tooth gearing, epicycloidal and involute teeth, bevel wheels, etc. Schwamb and Merrill's Mechanism. *Three recitation credits per week, second term. Required of Sophomores in Mechanical and in Chemical Engineering.* Mr. Eames.



XIII. Valve Gears and Dynamics.—Plane slide valves, piston valves, riding cut-off valves; Joy and Marshall gears; Stephenson, Gooch, and Walsheart link motions; drop cut-off valves; Corliss, Brown, and Putnam valves. Peabody's Valve Gears. Lectures and references. *Three recitation credits per week, second term. Required of Juniors in Mechanical Engineering.* Mr. Eames.

XIV. Machine Shop (continuation of subject VII.)—Advanced work in machine construction. *Three laboratory credits per week, throughout the year. Required of Juniors in Mechanical Engineering, and Short-Course students in Engineering, second year.* Mr. Eldred.

XV. Experimental Engineering a.—Lectures and laboratory work in gases, oils, and fuels; flue-gas analysis, calculation of air per pound of coal, loss due to excess air and to imperfect combustion; analysis of fuel gases and calculation of heating values; determination of heating values by the Junkers and Parr calorimeters; study of gases in producer and gas-engine work. *Two laboratory credits, first term. Required of Juniors in Mechanical and Electrical Engineering, and Seniors in Chemical Engineering.* Professor Wales.

XVI. Experimental Engineering b.—General calibration and testing of engineering instruments and apparatus; gauges; planimeter; manometers; indicators; Prony brakes; scales; valve setting by measurement and by the indicator; Carpenter calorimeter; Peabody calorimeter; flow through orifices; weirs; nozzles; Pitot tube; meters; Venturi meters; hydraulic ram; turbine, etc. *Two laboratory credits per week, second term. Required of Juniors in Mechanical, Electrical and Civil Engineering.* Professor Wales and Mr. Eames.

XVII. Experimental Engineering c.—Properties of materials. Lectures on the metallurgy of iron and steel; effects of impurities; cold-working; repeated stresses; tensile, compressive, and shearing strengths; ductility; resilience, etc.; copper, brass, bronze, and other alloys; timber, stone, and brick. The manufacture of natural and Portland cements; effects of over- and under-burning, overliming,  $\text{SO}_3$ , etc.; discussion of tests and their interpretation. Laboratory work is parallel with lectures. Tensile strengths of cast-iron, wrought-iron, and steel; compressive strength of metals, timber, concrete, cement; shearing tests of metals; transverse tests of timber and iron; stress-strain diagram, elastic limit, yield point, modulus of rupture; tensile tests of cement; pat tests, boiling tests; specific gravity; fineness; time of set, etc. Determination of the best proportions of cement, sand, and rock of given characteristics. *Two lecture and two laboratory credits per week, first term. Required of Seniors in Mechanical, Electrical, and Civil Engineering.* Professor Wales and Mr. Eames.

XVIII. Experimental Engineering d.—Hot-air engine, gas engine, steam pump, injectors, transmission dynamometers; boiler tests; complete tests of power plants; outside work on the H. P. of a stream, with tests of hydraulic power plant; outside tests of manufacturing plants, with calculations, reports, and recommendations. *Two laboratory credits per week, second term. Required of Seniors in Mechanical Engineering.* Professor Wales.

XIX. Heating and Ventilation.—Discussion of the principles and practice of the various systems of heating and ventilating—direct and indirect, hot-air,

hot-water, pressure steam, exhaust steam, vacuum systems, fans, blowers; calculation of ventilation and radiation; flues, pipes, and radiators; air troubles; central heating systems with central power plants; design of heating system for a given building. *One recitation credit per week, second term. Required of Seniors in Mechanical Engineering.* Professor Wales.

XX. Machine Design.—Design of machine parts from considerations of the motions involved, strength, rigidity, and friction; design of a complete machine; calculations with design of some type of engine, starting with given requirement of H. P., speed, etc., and with an assumed theoretical indicator card. *Three laboratory credits per week throughout the year. Required of Seniors in Mechanical Engineering.* Mr. Eames.

XXI. Power Plants and Power-Plant Design.—Study of the various types—as to choice, location, installation, and operation; prime movers, their accessories and auxiliaries.

Steam Plants.—Study of the effects on economy, range, and reliability of simple or compound, condensing or non-condensing engines with various valve gears, throttling and cut-off governors, different boiler installations, feed-water heaters, economizers, pressure regulators, pumps, injectors, mechanical stokers, forced and induced draft, chimneys, etc.; calculations of proper sizes, powers, and strengths of machines and apparatus of the power plant; methods of improving economy. The place of the steam turbine in power-plant work.

Hydro Plants.—Discussion of the types of hydraulic machinery, their efficiency, and the particular conditions to which each is best adapted. This will be a development of the previous work in hydraulics to meet the need of the power engineer.

Gas-Producer Plants.—The different suction and pressure producers, theory, capacity, future, etc.; gas engines, from both the thermo-dynamic and the mechanical points of view. *Two lecture credits and one laboratory credit per week, first term. Required of Seniors in Mechanical Engineering. Two lecture credits per week, first term. Required of Seniors in Electrical Engineering.* Professor Wales.

XXII. Assigned Work.—This may be of the nature of research or of specialized study along some particular line of engineering. Options are offered in theory of elasticity, advanced hydraulics, etc. *Three credits per week, throughout the year. Required of Seniors in Mechanical Engineering.*

XXIII. Dynamics of Machines.—Analysis of stresses, effects of inertia, balance, reciprocating parts, flywheels, design of high-speed engines and machinery. *Two recitation credits per week, second term. Required of Seniors in Mechanical Engineering.* Professor Wales.

XXIV. Works Management.—The economics of the shop and factory, cost-keeping, efficiency in production. *One lecture credit per week, second term. Required of Seniors in Mechanical Engineering.* Professor Wales.

XXV. Elements of Thermo-dynamics.—A non-mathematical discussion of boilers, engines, pumps, and power apparatus for civil engineers. *Three recitation credits per week, first term. Required of Juniors in Civil Engineering.* Mr. Cloke.



A. Mechanical Drawing.—Lettering, sketching, use of drafting tools, projection drawing, representation of machine parts. *Three laboratory credits per week, throughout the year. Required of Short-Course students in Engineering, first year.* Mr. Peaslee.

B. Mechanical Drawing.—Detail and assembly drawing, elementary machine design. *Three laboratory credits per week, throughout the year. Required of Short-Course students in Engineering, second year.* Mr. Peaslee.

D. Mechanical Movements.—Belts, pulleys, gearing, screw gearing, differential screws, tackles, hoists, hydraulic jacks, inclined planes, differential pulleys, pumps, crank and rocker, sliding and swinging block mechanisms, shafts, hangers, etc., cams and their design. *Three recitation credits per week, throughout the year. Required of Short-Course students in Engineering, first year.*

E. Engineering Theory.—An elementary discussion of types of engines, valve gears, governors, etc., boilers, types, corrosion and incrustation, combustion, methods of firing, draft, safety valves, boiler H. P. testing; lubricants and lubrication; gas engines, elementary study of materials; practical electricity. *Five recitation credits per week, throughout the year. Required of Short-Course students in Engineering, second year.*

F. Applied Electricity.—Elementary theory, wiring, motors, dynamos, etc. *One recitation credit and two laboratory credits per week, throughout the year. Option for Short-Course students in Engineering.*

## Electrical Engineering.

PROFESSOR DICKINSON, MR. CLOKE, MR. PEASLEE.

The aim of the course in electrical engineering is to give the student such training in the fundamental principles of the subject as will fit him to take up, in an intelligent and effective manner, any line of engineering work requiring special electrical knowledge. Instruction is given in both classroom and laboratory, the aim of each method of instruction being to supplement the other, and to develop resourcefulness and the habit of independent thought on the part of the student.

### Subjects.

I. Theory of Direct Currents.—A detailed study of the theory of direct-current apparatus. The theory of dynamos, motors, and auxiliary apparatus. *Three recitation credits per week, first term. Required of Juniors in Electrical Engineering and of Seniors in Mechanical Engineering.* Mr. Cloke.

II. Direct-Current Laboratory.—A course following Physics V, and consisting of tests of various types of direct-current apparatus. These include magnetization and characteristic curves of different types of machines, as well as tests for

efficiency, regulation, temperature rise, and tests of a similar nature. *Three laboratory credits per week, second term. Required of Juniors in Electrical Engineering and of Seniors in Mechanical Engineering.* Mr. Cloke.

III. Electrical Measurements.—A course designed to familiarize the student with physical and electrical units, fundamental and derived; the electrical standards of E. M. F., current, and resistance; and with the methods employed in the simpler electrical measurements. *One recitation credit per week for last nine weeks, second term. Required of Sophomores in Electrical Engineering.* Mr. Cloke.

IV. Theory of Alternating Currents.—Recitations and lectures. The elements of the theory of alternating currents and of alternating-current machinery. This course includes the simpler theories regarding the action of A. C. dynamos, motors, converters, and transformers. *Two recitation credits per week, second term. Required of Juniors in Electrical Engineering and of Seniors in Mechanical Engineering.* Professor Dickinson.

V. Theory of Alternating Currents.—Recitations and lectures, continuing subject IV. The more advanced theories regarding the effect of inductance and capacity in A. C. circuits, and of the action of A. C. machinery, are discussed. Assigned readings and reports are a feature of the subject. *Three recitation credits per week, throughout the year. Required of Seniors in Electrical Engineering.* Professor Dickinson.

VI. Alternating-Current Laboratory.—A course consisting of tests of different types of alternating-current apparatus, such as single and polyphase generators and motors, induction motors, converters, and transformers. *Three laboratory credits per week, throughout the year. Required of Seniors in Electrical Engineering.* Professor Dickinson.

VII. Design of Electrical Machinery.—General principles of the design of electrical apparatus, including a direct and an alternating current generator. *Three laboratory credits per week, second term. Required of Seniors in Electrical Engineering.* Professor Dickinson.

VIII. Telephone Engineering.—A consideration of the development of the modern telephone, with special reference to the common battery systems. *One recitation credit per week, first term. Required of Seniors in Electrical Engineering.* Mr. Peaslee.

X. Transmission of Energy.—A study of systems of high-tension distribution, the effect of capacity and inductance, the construction of lines, their protection, and the troubles developing in high-tension work. *Two recitation credits per week, first term. Required of Seniors in Electrical Engineering.* Professor Dickinson.

XI. Electric Railway Engineering.—A discussion of the economic considerations in the development of an electric railway, methods of construction, the location of the generating station, the design of the distributing system, types of motors, and systems of control. *Two recitation credits per week, second term. Required of Seniors in Electrical Engineering.* Mr. Cloke.

XII. Assigned Work.—Thesis work is assigned to those Seniors possessing special aptitude for original research. Other students are assigned special work in the laboratories of the department. *Three laboratory credits per week, throughout the year.* Professor Dickinson.

## Civil Engineering.

PROFESSOR WEBSTER, MR. BILLS.

It is the purpose of this course to give the student such training in the fundamental principles of engineering as to prepare him for the duties and opportunities that may be offered in the various fields of civil engineering. With this object in view, application of the theories and principles learned in the classroom is made in the field, laboratory, and drafting room. An effort is also made to give the student as liberal a training in the sciences and arts as his limited time will permit, but the primary purpose is to prepare him for one definite line of work.

In order to widen the scope of the student's opportunities, the name of the department has been changed from Highway Engineering to Civil Engineering, and corresponding changes have been made in the course of study. However, owing to the growing importance of highway engineering in this state and throughout the country in general, considerable emphasis is still placed on this phase of engineering work. The state appropriates annually a sum of money, which is expended under the direction of the instructor and students of the department, in the construction and maintenance of roads on the college property. In this way practical experience is obtained in highway engineering.

The equipment of the department consists of levels, transits, compasses, rods, tapes, chains, drafting instruments, etc., and testing machines, to which the student has access. He also has free use of the library, in which are found the leading engineering journals, and many of the principal works on various engineering subjects.

### Subjects.

I. Surveying.—Instruction is given by means of recitations, field and laboratory work, in the theory, use, and adjustments of the compass, level, and transit. The field work includes the prolongation of straight lines, determination of distances, angles, areas, boundaries, corners, and exercises in leveling, etc.

Maps are made from the field notes. *One recitation and two field credits per week, first term. Required of Sophomores in Mechanical, Electrical, and Civil Engineering.*

II. Topographic Surveying.—A study is made of the theory and use of the plane table, and of the transit and stadia in making topographic surveys. A complete topographic survey based on a system of triangulation is made, including the completion of a map. *One recitation and two field credits per week, second term. Required of Sophomores in Civil Engineering.*

III a. Railroad Engineering.—The work consists of a reconnoissance, a preliminary and a location survey of a short line of railroad, for the purpose of giving the student sufficient work to familiarize him with the methods in actual practice. A set of notes is kept by each student, from which a map, a profile, and estimates are made. A study is also made of the properties of curves, switches, frogs, turnouts, and the spiral, and the methods of locating these in the field. *Five credits per week, divided between field and recitation as seems advisable, first term. Required of Juniors in Civil Engineering.*

III b. Railroad Engineering.—The principles of economic railroad construction and maintenance; railway appliances, ballast, and roadbed, culverts and trestles, turnouts, sidings, yards, terminals, signaling, locomotive and grade problems, betterment surveys, etc. *Three recitation credits per week, second term. Required of Juniors in Civil Engineering.*

IV. Graphic Statics.—Instruction is given in graphic statics and its application in the design of simple framed structures. *Two recitation credits per week, first term. Required of Juniors in Civil Engineering.*

V. Roads and Pavements.—The theoretical work of this course consists of a discussion of the principles and details involved in the location, construction and maintenance of earth, gravel, and macadam roads, together with a discussion of the methods of construction, durability, maintenance, and assessment of cost of the various kinds of pavements used on city streets. The field work consists in the construction of a gravel or macadam road on the college grounds. *Three recitation credits and one field credit per week, second term. Required of Juniors in Civil Engineering.*

VI. Bridge Details.—The work in this course consists in making a tracing of a shop drawing, estimating the weight and determining the efficiency of the various members of a highway bridge. *Two laboratory credits per week, first term. Required of Seniors in Civil Engineering.*

VII. Bridge Analysis.—Instruction is given in the computation of stresses in the various types of bridges by graphical and algebraic methods under different conditions of loading. *Two recitation credits per week, first term. Required of Seniors in Civil Engineering.*

VIII. Bridge Design.—The student designs a plate girder and a bridge, makes the shop details, and a set of working drawings. *Three laboratory credits per week, second term. Required of Seniors in Civil Engineering.*

IX. Masonry Construction.—This course deals with the materials of masonry,



including brick, stone, lime, and cement; the theory of masonry structures, including foundations for buildings, bridges, and piers; the construction of retaining walls, culverts, bridge abutments; masonry dams and arches. The student is directed to important articles in the current literature of the subject, and a systematic and thorough laboratory course on cement testing is given. *Two recitation credits and one laboratory credit per week, first term. Required of Seniors in Civil Engineering.*

X. Reinforced Concrete.—A study is made of the principles of mechanics underlying the design of reinforced concrete. Working stresses and economical proportions are considered, also the application of reinforced concrete construction to building construction, arches, retaining walls, dams, and miscellaneous structures. *Two recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XI. Sewerage.—A discussion of the separate and combined systems of sewers; relation of rainfall to storm-water flow; hydraulics of sewers; removal of house sewage; the design and construction of sewers and method of sewage disposal. *Two recitation credits per week, first term. Required of Seniors in Civil Engineering.*

XII. Water Supply.—A discussion of the quantity of water required, sources of supply, flow of streams, and of ground water. Instruction is also given in the general arrangement of waterworks, loss of head in flow of water through pipes, stresses in dams and water towers. Works for the purification and distribution of water are discussed, including reservoirs, settling basins, pumping machinery, etc. *Three recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XIII. Tunneling.—A study of the methods of making tunnel surveys and of the modern methods employed in tunnel construction. *One recitation credit per week, second term. Required of Seniors in Civil Engineering.*

XIV. Contracts and Specifications.—A study of the fundamental principles of the law of contracts, and their application to engineering work. *Two recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XV. Assigned Work.—With the advice and consent of the head of the department, the student elects three hours' work in the Senior year. This may be research, thesis, or recitation and laboratory work, depending upon the qualifications of the student. *Three credits per week, throughout the year. Required of Seniors in Civil Engineering.*

XVI. Vacation Reading.—Systematic reading during vacations on some topic assigned by the head of this department.

XVII. Metal Structures.—The graphical determination of stresses in steel mill buildings. *One laboratory credit per week, second term. Elective for Seniors in Civil Engineering.*

XVIII. Irrigation Engineering.—This includes a study of the impounding, diverting, flow, and measurement of water, quantity acquired, canals, canal works, storage reservoirs, waterways, etc. *Three recitation credits per week, first term. Elective for Seniors in Civil Engineering.*



## Geology and Mineralogy.

DR. WHEELER, DR. LEIGHTON, MR. SMITH.

**GEOLOGY.**—Under this subject historical geology is considered in outline, attention being given, also, to those phases of dynamical and structural geology which are particularly important. Special attention is given to rock weathering and soil formation, and to those characteristics of rocks which are of chief importance in connection with road construction.

**DETERMINATIVE MINERALOGY.**—A short course dealing with the elements of crystallography is given, together with the physical and chemical characteristics of minerals, especially that of rock-making minerals composing our soils. Laboratory work in blowpipe analysis and physical determination of minerals follows the crystallography.

### Subjects.

I. Geology.—*Two recitation credits per week, second term. Required of Juniors in Civil Engineering and Sophomores in Agriculture.*

II. Mineralogy.—See Chemistry XI.

### History.

PRESIDENT EDWARDS, ASSISTANT PROFESSOR SPENCER.

I. Social, Economic, and Industrial History of the United States.—*Four recitation credits per week, second term. Required of Juniors in all courses.*

II. Government and Politics in the United States.—*Four recitation credits per week, first term, last six weeks; and second term, first six weeks. Required of Seniors in all courses.*

A. English History. *Three recitation credits per week, throughout the year. Required of students in Domestic Science, second year.*

## English and Modern Languages.

DR. SECHRIST, ASSISTANT PROFESSOR SPENCER, MISS MYRICK.

In all the college courses leading to a degree, English is required throughout the first three years and during twelve weeks of the Senior year. The first two years, a study is made of the principles of clear thinking and effective expression as exemplified in modern literary and scientific prose; however, the greater part of the time is devoted to the writing of themes and to oral expression, special stress

being laid on exposition and argument. In the later and more advanced stages of the work, a systematic study is made of literature as an art according to the principles of criticism, the controlling aim being to deepen the appreciation of poetry in its various forms and functions, in its ethical import and its philosophy.

Besides the work in English, two years of foreign language work are required in all college courses leading to a degree, except mechanical, electrical, and civil engineering, where the requirement is one year. Preference is given to German, but French is also offered.

The library is a most important factor in the work of the department, as English literature is represented in it by some twelve hundred carefully selected volumes, and the French and German literatures by about six hundred.

### ENGLISH.

I. Rhetoric and Composition.—Studies in the method of modern prose with analysis of models of literary and logical form. Daily practice in the various forms of composition, special stress being laid on exposition. *Three recitation credits per week, throughout the year. Required of Freshmen in all courses.*

II. Newspaper Work.—News writing, reporting, news values, proof-reading, editorials. *One recitation credit per week, first term. Required of Sophomores in all courses.*

III. Argumentation.—Theory and Practice (in connection with Oral Exp. II); brief-drawing. *One recitation credit per week, second term. Required of Sophomores in all courses.*

IV. Principles of Criticism.—Study of literary method with especial reference to lyric and epic poetry. Interpretation of classic examples in each form. *Four recitation credits per week, first term. Required of Juniors in all courses.*

V. The Drama.—The great character types of dramatic literature with Shakespearean tragedy as the central study. *Four recitation credits per week, last twelve weeks of the second term. Required of Seniors in all courses.*

VI. Composition.—Oral and written, in kind and amount according to individual need. *Not less than two recitation credits per week, first term; second term. Elective for Freshmen.*

A. Elementary English.—Composition, oral expression, assigned reading. *Five recitation credits per week, throughout the year. Required of Short-Course Students in Agriculture, Domestic Science, and Engineering, first year.*

B. Elementary English.—A continuation of A, including, also, some instruction in civics and economics. *Three recitation credits per week, throughout the year. Required of Short-Course students in Domestic Science and Engineering, second year.*

## ORAL EXPRESSION.

I. Interpretive Reading.—The fundamentals of expression, pronunciation, articulation, the training of the voice. The intellectual element in expression: emphasis, inflection, phrasing—the reading of prose. The emotional element in expression: quality, force, pitch, rhythm—the reading of poetry. The elements of dramatic expression. *One recitation credit per week, first term. Required of Sophomores in all courses.*

II. Debating.—The theory of the subject with oral practice; taken with Argumentation (English III). *One recitation credit per week, second term. Required of Sophomores in all courses.*

III. Debating.—Instruction and practice in the art of debate. Two public debates will be given by the students. *One recitation credit per week, throughout the year. Required of Juniors in all courses.*

IV. Oratory and Extempore Speaking.—Theory and practice. This work is given in connection with the subjects of Government, Political Economy, and English V. *One recitation credit per week, throughout the year. Required of Seniors in all courses.*

## GERMAN.

I. Elementary German.—Grammar, dictation, conversation, reading of easy prose and poetry. *Three recitation credits per week, throughout the year. Required of Freshmen who do not offer German for entrance.*

II. Reading of texts portraying German life and institutions, composition, conversation. *Three recitation credits per week, throughout the year. Required of Sophomores in Agriculture, Applied Science, Home Economics, and Chemical Engineering.*

III. Scientific German.—*Three recitation credits per week, throughout the year. Elective for students who have taken I and II or their equivalents.*

IV. Scientific German.—*From three to five recitation credits per week, first term; Freshman year. Elective for Freshmen.*

## FRENCH.

I. Elementary French.—Grammar, dictation, conversation, reading of easy prose and poetry. *Three recitation credits per week, throughout the year.*

II. Reading of intermediate texts, composition, conversation, selections from Hugo's *Misérables* or similar work. *Three recitation credits per week, throughout the year.*

III. Scientific and Classical French.—*Three recitation credits per week throughout the year. Elective for students who have taken I and II or their equivalents.*

IV. Scientific French.—*From three to five recitation credits, first term; Freshman year. Elective for Freshmen.*

## SPANISH, ITALIAN.

I. Elementary Spanish or Italian.—*Three recitation credits per week, first or second term. Elective.*

## Mathematics.

PROFESSOR TYLER, MR. BILLS.

The work in this department covers two distinct phases of mathematical training: the college and the short-course instruction. Throughout the regular college work, emphasis is laid both on the theory and direct application of the different subjects to the problems of engineering and agriculture. An attempt is made to present a working knowledge of arithmetic, algebra, and bookkeeping, and their practical use to short-course students.

## Subjects.

I. Higher Algebra.—*Five recitation credits per week, nine weeks, first term. Required of all Freshmen. Professor Tyler, Mr. Bills.*

II. Trigonometry.—*Five recitation credits per week, nine weeks, first term. Required of all Freshmen. Professor Tyler, Mr. Bills.*

VII. Trigonometry (completed).—*Five recitation credits per week, first four weeks, second term. Required of Freshmen in Engineering and Applied Science. Professor Tyler, Mr. Bills.*

VIII. Analytics.—*Five recitation credits per week, last fourteen weeks, second term. Required of Freshmen in Engineering and Applied Science. Professor Tyler, Mr. Bills.*

IX. Analytics (completed).—*Five recitation credits per week, first four weeks, first term. Required of Sophomores in Engineering. Professor Tyler.*

X. Calculus.—*Five recitation credits per week, last fourteen weeks, first term. Required of Sophomores in Engineering. Professor Tyler.*

XI. Calculus (completed).—*Five recitation credits per week, second term. Required of Sophomores in Engineering. Professor Tyler.*

XII. University Algebra.—*Three recitation credits per week, first term. Elective for Freshmen.*

XIII. Practical Computations.—*Three recitation credits per week, second term. Elective for Freshmen.*

F. Arithmetic.—*Five recitation credits per week, throughout the year. Required of Short-Course students in Engineering and Domestic Science, first year. Mr. Bills.*

G. Bookkeeping.—*Four recitation credits per week, first term. Required of all Short Course students, second year. Mr. Bills.*



H. Algebra.—*Five recitation credits per week, second term. Required of students in Short-Course Engineering, second year, and in Domestic Science, second term, second year. Mr. Bills.*

## Military Science and Tactics.

CAPTAIN DOVE.

All male students are required to attend exercises in military instruction during their attendance at the college, unless excused by reason of physical disability. Credit is given for this work on the same basis and under the same regulations as in other departments.

The war department furnishes for use in this instruction United States magazine rifles (Krag-Jorgensen pattern), swords, equipments, and ammunition for target practice. The cadets are organized this year into a battalion of three companies of infantry and band. Theoretical instruction is given by means of lectures and recitations, and practical instruction by means of infantry drills in the school of the squad, the company, and the battalion. The aim of these military exercises is to improve the physique, to inculcate the habit of prompt and cheerful obedience and courtesy to rightfully constituted authority, to exercise an elevating influence on the conduct of the corps of cadets, and as far as possible to qualify students who take the military course to be company officers of infantry, volunteers or militia, if necessary.

Competitive drills may be held annually between the companies of the battalion. The name of the best drilled company and its commander is placed on the battalion colors.

The names of such students of the graduating class each year as have shown special aptitude for military service will be reported to the Adjutant General of the Army and also to the Adjutant General of the State.

All students in the military department are required to supply themselves, through the commandant, with the prescribed uniform, which consists of dark blue blouse, cap and trousers; white collar and white gloves, military pattern, and black shoes; the insignia of rank of officers and non-commissioned officers to conform to that of the infantry, United States Army.

Uniforms must be worn at all ceremonies, drills, and other forms of practical instruction.



## Subjects.

I. Practical Instruction.—(a) Infantry Drill Regulations, including the school of the squad, of the company, and of the battalion. Ceremonies and Inspections. (b) Small Arms Firing Manual. Sighting drills, position and aiming drills, gallery practice, estimating distance. (c) Field Service Regulations. Orders, advance guards, flank guards, rear guards, outposts, patrolling, and marches and camping whenever possible. (d) Manual of Guard Duty. *Two exercises of one hour each per week, counting as one credit, throughout the year. Required of all the command.*

II. Theoretical Instruction.—United States Infantry Drill Regulations. Small Arms Firing Regulations. Manual of Guard Duty. Field Service Regulations of United States Army. *One recitation credit per week, throughout the year. Required of all Freshmen.*

## Physics.

PROFESSOR DICKINSON, MR. CLOKE.

The instruction given in this department is intended to acquaint the students with the fundamental concepts of physical science. The work will be as broad as is consistent with the time and needs of the students.

This department is equipped with vernier and micrometer calipers, micrometer microscopes, comparator, dividing engine, cathetometer, simple and compound pendulums, and balances for exact measurements in mechanics. It has also apparatus for determining the coefficient of linear expansion and for the determination of specific and latent heats, a weight thermometer apparatus for determining the density of liquids and solids, a thermo-couple for direct determination of temperatures up to 1650° C., Melloni's apparatus for investigation in radiant heat, and apparatus for determining the mechanical equivalent of heat.

In light, the laboratory is equipped to carry on the usual college work. The department has apparatus for finding the focal length of lenses and mirrors; a Pulfrich refractometer; spectrometers; an interferometer (Institute of Technology patterns); photometer; total reflectometer; and many smaller instruments, including simple and compound microscopes. The greater part of the above listed apparatus is new, having been recently purchased of foreign makers.

The laboratory for exact measurements in electricity and magnetism is also fitted up with new apparatus recently purchased of the

Leeds and Northup Company of Philadelphia, and among other instruments are several types of D'Arsonval galvanometers; Wheatstone bridges, slide wire and post-office patterns; standard cells (Clark and Weston types); standards of resistance, capacity, and self-induction; magnetometers; voltmeters; and many smaller instruments sufficient to carry on the usual college work in electrical measurements. For advanced electrical measurements the department is provided with Weston and Thompson ammeters, and voltmeters with both low and high ranges, wattmeters, a Leeds and Northup alternating and direct current comparator.

In the subject of sound the department is provided with apparatus for the determination of wave-length, pitch, frequency, etc.

### Subjects.

I. Descriptive Physics.—A course designed for students in Agriculture. Considerable time is given to the discussion of the principles of mechanics as applied to farm machinery. The course furnishes an excellent foundation for further work in agricultural physics. *Five recitation credits per week, second term. Required of Sophomores in Agriculture and Home Economics.* Mr. Cloke.

II. General Physics.—A mathematical treatment of the subject. *Four recitation credits per week, throughout the year. Required of all Sophomores in Engineering and Teachers' Course in Applied Science.* Professor Dickinson.

III. Laboratory Physics.—A course in physical measurements intended to teach students methods and to form a basis for future engineering work. The calculation of results will be given special attention. *One and one-half laboratory credits per week, throughout the year. Required of Sophomores in Engineering and Teachers' Course in Applied Science.* Mr. Cloke.

IV. Electrical Measurements.—A course of lectures treating of the theory and manipulation of electrical measuring instruments. *One recitation credit per week, first term. Required of Juniors in Electrical Engineering.* Professor Dickinson.

V. Electrical Measurements Laboratory.—Direct-current measurements, resistance, potential current, magnetic properties of iron and steel, calibration of direct-current instruments. *One and one-half laboratory credits per week, first term. Required of Juniors in Electrical Engineering.* Professor Dickinson.

VI. Principles of Illumination.—A study of different sources of light, the measurements of candle power, and the principles of illuminating engineering. *One recitation credit and one and one-half laboratory credits per week, first term. Required of Juniors in Electrical Engineering.* Professor Dickinson.

A. Elementary Physics.—A course designed to give the student a grasp of the more important physical principles underlying Engineering work. *Three recitation credits per week, throughout the year. Required of Short-Course students in Engineering, second year.* Mr. Cloke.

## Physical Training.

MISS HARRALL.

All women students are required to attend the gymnasium exercises. These are designed to improve the general health of the young women and to train them in agility, poise and general gracefulness, and to develop alertness and a ready response to any order or request. The exercises are confined to the lighter work of a gymnasium because of a lack of other equipment.

I. Marching; free arm exercises; wand and dumb-bell exercises; Indian club swinging; aesthetic dancing. *One laboratory credit per week, throughout the year. Required of all women students.*

## Woodwork.

MR. T. C. RODMAN.

H. Farm Buildings.—A practical course in the planning of farm structures, estimating quantities of material required, and costs. *One shop credit per week, second term. Required of Short-Course students in Agriculture, second year.*

I. Shopwork.—Woodworking at the bench and lathe. *One and one-half shop credits per week, first term. Required of Short-Course students in Agriculture, first year.*

## Zoölogy.

PROFESSOR BARLOW.

The work in this department is designed to meet the needs of two classes of students, those who are interested in the economic aspect of animal life and those who purpose to become teachers. To meet the needs of the first class, subjects are given which are planned to call attention to the economic importance of the different orders. Much time is allotted to entomology, and in this subject special attention is given to injurious species. For those who are to be teachers, a thorough training is given in the morphology and classification of animals as a preparation for the more special subjects that follow. In these, attention is directed to the habits and relations of animals, which are studied both in the field and laboratory.

The laboratory is equipped with a series of charts, valuable models, and many mounted skeletons. The Rhode Island birds are repre-

sented by mounted specimens of practically every species; fishes; reptiles, and batrachians, by alcoholic preparations. The collection of insects, begun recently, now fills about one hundred cases, and is being steadily increased. Each student is given the use of compound and dissecting microscopes. The necessary instruments for laboratory work can be procured at small cost at the college store.

### Subjects.

I. General Zoölogy.—Discussion of the more important laws of biology and the dissection of representatives of the more important Phyla. *Two laboratory and two recitation credits per week, first term. Required of Sophomores in Agriculture, Home Economics, and Applied Science.*

II. General Zoölogy.—Special attention is given to the relation of animals to their surroundings. *Two laboratory credits and one recitation credit per week, second term. Option for Seniors in Applied Science.*

III. Physiology.—The physiology of the higher mammals. *One laboratory and three recitation credits per week, second term. Required of Sophomores in Agriculture, Home Economics, and Applied Science.*

IV. Economic Entomology.—*One laboratory and three recitation credits per week, second term. Required of Juniors in Agriculture. Option in Applied Science.*

V. General Entomology.—*Two laboratory credits and one recitation credit per week, first term; two recitation and three laboratory credits per week, second term. Option for Seniors in Applied Science.*

VI. Systematic Entomology.—*Three or five laboratory credits per week, throughout the year. Elective for those who are taking or have taken Zoölogy V.*

VII. Vertebrate Anatomy.—*Three laboratory credits per week, first term. Required of Juniors in Home Economics. Option for Juniors in Applied Science.*

VIII. Histology and Embryology.—*Three laboratory and two recitation credits per week, second term. Required of Juniors in Home Economics. Option for Juniors in Applied Science.*

IX. Methods in Nature Study.—Bird life, habits of insects, aquaria. *One and one-half laboratory or field credits per week, second term. Elective.*

A. Elementary Zoölogy.—Deals with forms of economic importance. *Three recitation and one and one-half laboratory credits per week, first term. Required of Short-Course students in Agriculture and Domestic Science, first year.*



## Organizations.

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### Athletic Association.

WILLIAM HENRY WEBB.....	President.
CEDRIC HAMLIN COLLINS.....	Vice-President.
JOHN BARLOW.....	Treasurer.

### Agricultural Club.

WALTER COLWELL IRONS.....	President.
HERBERT REINER.....	Vice-President.
WILLIAM EDWARD ANDERSON.....	Secretary.
CLARENCE ELMER BRETT.....	Treasurer.

### Debating Society.

CARLE MUZZY BIGELOW.....	President.
FRANK HAROLD BRIDEN.....	Vice-President.
HAROLD WILLIAM BROWNING.....	Secretary.
CLARENCE ELMER BRETT.....	Treasurer.

### Engineering Society.

CHARLES VARNUM JOHNSON.....	President.
F. H. BRIDEN.....	Vice-President.
BENJAMIN COHEN.....	Secretary-Treasurer.

### Student Council.

ARTHUR J. PATTERSON.....	President.
WILLIAM F. REDDING.....	Vice-President.
JAMES RUSSELL ESTY.....	Secretary-Treasurer.

### Young Men's Christian Association.

PHILIP H. CLARK.....	President.
WALTER C. IRONS.....	Vice-President.
ARTHUR J. PATTERSON.....	Secretary.
DENNIS F. BARRY.....	Treasurer.



### Young Women's Christian Union.

ESTHER LOOMIS CONGDON.....	President.
DOROTHY DEARBORN ELKINS.....	Vice-President.
ELECTRA H. COBB.....	Secretary.
ELIZABETH CROUCHER.....	Treasurer.

### Dramatic Club.

EARL A. TYLER.....	President.
MARION W. BORDEN.....	Vice-President.
ADELAIDE WATSON.....	Secretary.
WALDO REINER.....	Treasurer.

### Lecture Association.

PHILIP H. CLARK.....	President.
ALLAE C. SLATER.....	Vice-President.
FRANK K. SECHRIST.....	Treasurer.
ARTHUR J. PATTERSON.....	Assistant Treasurer.

## BATTALION ORGANIZATION, JANUARY 10, 1912.

WILBUR E. DOVE, Captain, United States Army.

CADET OFFICERS AND NON-COMMISSIONED OFFICERS.

*Field and Staff.*

Major.....DAVID E. WARNER, JR.  
 First Lieutenant and Adjutant.....JOHN L. SULLIVAN.  
 Second Lieutenant, Quartermaster and Commissary.....CHARLES V. JOHNSON.

*Non-Commissioned Staff.*

Sergeant-Major.....WILFRED C. MATTHEWS.  
 Quartermaster Sergeant.....HAROLD W. HAWXHURST.  
 Color Sergeant.....RAYMOND C. HOPKINS.  
 Color Sergeant.....GEORGE W. SHERMAN, JR.

*Company A.*

Captain.....HENRY N. BARLOW.  
 First Lieutenant.....FRANK H. BRIDEN.  
 Second Lieutenant.....EDGAR G. DAVIS.  
 First Sergeant.....WILLIAM H. WEBB.  
 Co. Quartermaster Sergeant.....PHILIP H. CLARK.  
 Sergeant.....HARRY L. MOUNCE.  
 Sergeant.....WALDO REINER.  
 Corporal.....LEROY B. NEWTON.  
 Corporal.....HENRY E. DAVIS.  
 Corporal.....FRANK H. BAXTER.  
 Corporal.....HAROLD W. BROWNING.

*Company B.*

Captain.....CARLE M. BIGELOW.  
 First Lieutenant.....ARTHUR J. PATTERSON.  
 Second Lieutenant.....FRED A. RICHMOND.  
 First Sergeant.....EARL A. TYLER.  
 Co. Quartermaster Sergeant.....JAMES H. YOUNG.  
 Sergeant.....RALPH I. ALEXANDER.  
 Sergeant.....FRANK STECK.  
 Corporal.....GEORGE H. BALDWIN.

Corporal.....	JOHN C. GLYNN.
Corporal.....	HERBERT REINER.
Corporal.....	WALTER R. TURNER.

*Company C.*

Captain.....	WALTER DOLL.
First Lieutenant.....	WILLIAM H. TULLY.
Second Lieutenant.....	CHARLES H. LARKIN.
First Sergeant.....	IRVING C. MITCHELL.
Co. Quartermaster Sergeant.....	EDWIN R. NOYES.
Sergeant.....	JAMES R. ESTY.
Sergeant.....	WILLIAM F. REDDING.
Corporal.....	WILLIAM J. CORR.
Corporal.....	MYRON W. FINCH.
Corporal.....	BENJAMIN COHEN.
Corporal.....	GEORGE E. SLOCUM.

*Band.*

Chief Musician.....	CRAWFORD P. HART.
Drum Major.....	BERNARD A. AHRENS.
Principal Musician.....	OLIVER H. STEDMAN.
Sergeant.....	WALTER C. IRONS.
Corporal.....	ARTHUR L. REYNOLDS.
Corporal.....	REUBEN C. BATES.
Corporal.....	HERMAN B. BROWN.

## Alumni Association.

CALVIN LESTER COGGINS, 1907.....President.

Hoboken, N. J.

CLOVIS WILLIAM MITCHELL, 1908.....Vice-President.

New London, Conn.

JOHN RALEIGH ELDRED, 1900.....Secretary-Treasurer.

Kingston, R. I.

### *Executive Committee.*

C. L. COGGINS, 1907

C. W. MITCHELL, 1908

JOHN R. ELDRED, 1900

LEROY L. MOUNCE, 1910

C. T. ARNOLD, 1894

## Prizes and Honors.

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### THE KINGSTON PRIZES

The sum of sixty dollars offered by a friend of the college to encourage literary work among the students, was divided in 1911 into three portions, providing a first prize of twenty-five dollars, a second of twenty, and a third of fifteen dollars, for the best essays submitted in a contest held in June, 1911. The awards were as follows :

#### FIRST PRIZE:

Bacteriology and the Water Supply of Cities, Dorothy Walcott Caldwell.

#### SECOND PRIZE:

Electricity on Ocean Steamships, Clarence Bland Edwards.

#### THIRD PRIZE:

Christianity and Hinduism, Ethel Pierce Henderson.

### HONORS.

Honors awarded Commencement Day, June 22, 1911:

#### SENIOR.

Patrick Joseph Healy,

#### SOPHOMORE.

Marguerite White Elkins,  
Ralph Irwin Alexander,  
Dorothy Dearborn Elkins,  
James Hannibal Young,  
Benjamin Cohen,  
Arthur Leslie Reynolds.

#### JUNIOR.

Henry Newell Barlow,  
Allae Cordelia Slater,  
Walter Doll,  
Arthur John Patterson,  
George William Sherman, Jr.,  
Fred Allen Richmond,  
Carle Muzzy Bigelow.

#### FRESHMEN.

Olive Nicholson,  
Harold William Browning,  
Helen Wheeler Ford,  
Lorenzo Foster Kinney, Jr.,  
Frank Howard Baxter,  
James Hilton Aldred,  
Leroy Allen Whittaker,  
James Russell Esty.



## HONORABLE MENTION

Dorothy Jennette Bullock.

**Degrees Conferred in 1911.****Bachelor of Science.**

Andrews, Carmen Nichols,  
Angilly, Charles Enoch, Jr.,  
Easterbrooks, Harold Arnold,  
Easterbrooks, Louis Church,  
Gilcrest, Clyde Ronald,  
Harris, Burton Kenneth,  
Healy, Patrick Joseph,  
Kent, Robert Willard,

Minor, Arthur Jacob,  
Neal, William Thomas,  
Robinson, Benjamin Rowland,  
Ruprecht, Rudolf William,  
Safford, Howard Albert,  
Tucker, Harriet Taber,  
Wade, Ceylon Raymond.

**Master of Science.**

Hammett, Frederick Simons (A. B. Tufts College, 1908.)

**Certificates Awarded in 1911.****Two-Year Course in Agriculture.**

Tefft, Lucy Catherine.

## Students.

## Graduates.

Peaslee, George Everett (Pratt. Inst.)	Kingston.
Seabright, James Elbert (Univ. of Va.)	Kingston.
Thewlis, Malford W. (Bowdoin Coll.)	Wakefield.

## Seniors.

Barlow, Henry Newell, Elec. Eng.	Kingston.
Bigelow, Carle Muzzy, Appl. Sci.	Woonsocket.
Caldwell, Dorothy Walcott, Civ. Eng.	Woonsocket.
Clarke, Philip Harrison, Elec. Eng.	Centreville.
Cobb, Electra Henrietta, Home Econ.	Howardsville, Va.
Doll, Walter, Mech. Eng.	Berkeley.
Henderson, Ethel Pierce, Appl. Sci.	Westerly.
Kenyon, Annie Eliza, Appl. Sci.	Usquepaug.
Larkin, Charles Herbert, Civ. Eng.	Ashaway.
Nutting, Bertha May, Home Econ.	Brickerville, Pa.
Patterson, Arthur John, Elec. Eng.	Kingston.
Richmond, Fred Allen, Elec. Eng.	Hope Valley.
Sherman, George William, Jr., Elec. Eng.	Lafayette.
Slater, Allae Cordelia, Home Econ.	Slocum.
Warner, David Edmond, Jr., Agr.	Bridgeton.
Webster, Samuel C., Jr., Agri.	Westerly.
Whalen, William Joseph, Appl. Sci.	Providence.

## Juniors.

Ahrens, Bernard Alexander, Agr.	Kingston.
Alexander, Ralph Irwin, Mech. Eng.	Kingston.
Aspinwall, Frederick Otto, Chem. Eng.	Pawtucket.
Bates, Reuben Charles, Civ. Eng.	Providence.
Borden, Marion Wilhelmina, Home Econ.	Providence.
Cohen, Benjamin, Elec. Eng.	Kingston.
Congdon, Esther Loomis, Home Econ.	Wakefield.
Corr, William John, Appl. Sci.	East Greenwich.
Davis, Edgar George, Civ. Eng.	Providence.
Elkins, Dorothy Dearborn, Home Econ.	Amesbury, Mass.
Elkins, Marguerite White, Home Econ.	Amesbury, Mass.
Ford, Alice Edith, Appl. Sci.	North Easton, Mass.

Hart, Crawford Peckham, Agr.	Melville Station.
Hawxhurst, Harold William, Civ. Eng.	Providence.
Hopkins, Raymond Canfield, Elec. Eng.	Shannock.
Irons, Walter Colwell, Agr.	North Scituate.
Mitchell, Irving Calvary, Appl. Sci.	Oakland.
Noyes, Edwin Roy, Elec. Eng.	East Greenwich.
Redding, William Francis, Elec. Eng.	Meshanticut.
Reiner, Waldo, Civ. Eng.	Brooklyn, N. Y.
Reynolds, Arthur Leslie, Elec. Eng.	Providence.
Slocum, George Edwin, Elec. Eng.	Providence.
Stedman, Oliver Hazard, Elec. Eng.	Peace Dale.
Sullivan, John Leo, Elec. Eng.	Lonsdale.
Turner, Walter Raymond, Appl. Sci.	Johnston.
Wood, Susie Stanton, Home Econ.	Slocum.
Young, James Hannibal, Appl. Sci.	Kingston.

### Sophomores.

Aldred, James Hilton, Mech. Eng.	Ashton.
Anderson, Edwin, Mech. Eng.	Newport.
Anderson, William Edward, Agr.	Westerly.
Arnold, Louis Whitman, Jr., Appl. Sci.	Westerly.
Baxter, Frank Howard, Mech. Eng.	Mansfield, Mass.
Benson, Robert John, Elec. Eng.	Brockton, Mass.
Black, Theodore Edgar, Jr., Agr.	Westerly.
Boulester, Edward James, Appl. Sci.	Providence.
Brechin, John, Jr., Mech. Eng.	Bristol.
Brown, Herman Byron, Appl. Sci.	Hope Valley.
Browning, Harold William, Appl. Sci.	Matunuc.
Burdick, Powell, Mech. Eng.	Wickford.
Caldwell, Seth Atherton, Mech. Eng.	Woonsocket.
Carberry, Thomas Francis, Chem. Eng.	Providence.
Clarke, Charles Browning, Mech. Eng.	Wakefield.
Collins, Cedric Hamlin, Civ. Eng.	Berkeley.
Connor, Thomas Rowley, Civ. Eng.	Wakefield.
Davis, Henry Ellis, Agr.	Edgewood.
Esty, James Russell, Elec. Eng.	Slatersville.
Finch, Myron Whitmarsh, Agr.	Providence.
Ford, Helen Wheeler, Home Econ.	North Easton, Mass.
Glynn, John Charles, Civ. Eng.	New London, Conn.
Hawkins, Myron Angell, Agr.	Providence.
Huntley, Herbert George, Appl. Sci.	New London, Conn.
Jones, Carlton Walter, Civ. Eng.	Providence.
Kinney, Lorenzo Foster, Jr., Appl. Sci.	Kingston.
MacLellan, Alexander Davies, Civ. Eng.	Newport.
Matthews, Wilfred Chipman, Elec. Eng.	Providence.
McGolrick, James Edward, Agr.	New York, N. Y.

Nathanson, Joseph George, Elec. Eng.	Central Falls.
Newton, Leroy Burgess, Civ. Eng.	West Barrington.
Nicholson, Olive, Home Econ.	Pawtucket.
Nicholson, Sarah Alice, Home Econ.	Pawtucket.
Oslin, William Henry, Appl. Sci.	Providence.
Pollard, Raymond George, Mech. Eng.	Valley Falls.
Reiner, Frieda, Home Econ.	Brooklyn, N. Y.
Reiner, Herbert, Agr.	Brooklyn, N. Y.
Rossi, Louis, Civ. Eng.	Westerly.
Safford, Edith Marie, Home Econ.	Lancaster, Mass.
Shea, Joseph Francis, Elec. Eng.	Valley Falls.
Sherwin, Leroy Merton, Mech. Eng.	Kingston.
Soong, Aloy, Chem. Eng.	Canton, China.
Thayer, Harold Francis, Appl. Sci.	Woonsocket.
Turner, Harvey Robert, Civ. Eng.	Providence.
Webster, Earl Clifton, Civ. Eng.	Providence.
Young, Edwin Olney, Elec. Eng.	East Greenwich.

### Freshmen.

Allenson, Chester Williams, Eng.	Central Falls.
Allenson, Clifford Arnold, Eng.	Central Falls.
Barney, Raymond Livingston, Appl. Sci.	Providence.
Bliven, Charles L., Agr.	Bradford.
Borden, Norman Harrison, Eng.	Providence.
Broadfoot, Henry Harrington, Eng.	Westerly.
Brown, Oscar Anthony, Appl. Sci.	West Kingston.
Brownell, Kenneth Allen, Chem. Eng.	Adamsville.
Carley, Howard Raymond, Mech. Eng.	North Attleboro, Mass.
Cloke, Philip Royal, Eng.	Kingston.
Coleman, Carl Lafayette, Agr.	Orange, Mass.
Collamore, Vernon Wallace, Eng.	Brockton, Mass.
Dickinson, William Henry, Agr.	Hatfield, Mass.
Dodd, Dexter Tiffany, Agr.	Chestnut Hill, Mass.
Donovan, Lillian Marguerite, Appl. Sci.	Westerly.
Flaherty, Eugene Joseph, Eng.	North Attleboro, Mass.
Foley, Francis James, Eng.	Westerly.
Gates, Curtis Wolcott, Eng.	New London, Conn.
Gray, Janet Saxon, Home Econ.	Allenton.
Hall, Carlisle, Agr.	Providence.
Hanlin, William Frank, Eng.	Arlington.
Harding, Ada LaPlace, Home Econ.	Lyme, Conn.
Hathaway, Clifford Sherman, Eng.	Peace Dale.
Hudson, Royal Carlton, Appl. Sci.	Phenix.
Hunter, Albert Clayton, Appl. Sci.	East Providence.
Jackowitz, John Louis, Appl. Sci.	East Providence.
Jackson, Harold Mitchell, Agr.	Brockton, Mass.
Keith, Lawrence Fuller, Agr.	Campello, Mass.

Kelly, Henry Clinton, Eng.	Nayatt.
Kenney, Francis Royal, Agr.	Fall River, Mass.
Kivlin, Alfred Patrick, Eng.	North Attleboro, Mass.
Lennox, Frank Joseph, Eng.	Woonsocket.
Lewis, William Emanuel, Agr.	Woonsocket.
Macon, Dorothy Elizabeth, Home Econ.	Kingston.
McIntosh, Albert Edward, Eng.	Providence.
Meade, John Edward, Eng.	Nasonville.
Meyer, Frank Harry, Eng.	North Attleboro, Mass.
Miller, Joseph, Appl. Aci.	Narragansett Pier.
Miller, Wesley Clifton, Eng.	Providence.
Mowry, Harold Conrad, Eng.	North Scituate.
Mullen, Charles Edward, Appl. Sci.	Peace Dale.
Mullins, Marcus George, Appl. Sci.	Hatfield, Mass.
Nichols, Joseph Elton, Eng.	Woonsocket.
Nordquist, Harry Oscar Valdimar, Eng.	Providence.
Paine, Frank Eugene, Eng.	Warwick.
Parker, Ralph Langley, Agr.	Brockton, Mass.
Potter, Ivy Eldredge, Appl. Sci.	Lonsdale.
Rossi, Mary Christina, Appl. Sci.	Providence.
Rugg, Chester Warren, Eng.	Brocton, N. Y.
Senior, Walter Curtis, Agr.	Ipswich, Mass.
Spofford, William Preston, Eng.	Providence.
Tabor, Frank Edward, Eng.	Slatersville.
Tobey, Arthur William, Agr.	Brockton, Mass.
Trescott, Waldo, Eng.	Pawtucket.
Wales, Wilfred Nichols, Eng.	Groveland, Mass.
Watson, Adelaide Gilbert, Home Econ.	Peace Dale.
Wilcox, Harold Clayton, Agr.	South Milford, Mass.
Woodward, Alvah Gray, Eng.	Wakefield.

### Irregular.

Baldwin, George Holland, Agr.	Valley Falls.
Barry, Dennis Francis, Appl. Sci.	Warren, Mass.
Brett, Clarence Elmer, Agr.	Kingston.
Briden, Frank Harold, Mech, Eng.	Central Falls.
Champlin, Charles Edwin, Jr., Elec. Eng.	Westerly.
Clarke, Henry Marsh, Civ. Eng.	Westerly.
Croucher, Elizabeth, Home Econ.	Newport.
Dodge, William Earl, Mech. Eng.	Providence.
Goddard, Archie Coggeshall, Agr.	Newport.
Johnson, Charles Varnum, Civ. Eng.	Allenton.
Karmann, Hermann Harry, Civ. Eng.	Providence.
Kyle, Thomas, Agr.	Central Falls.
Lewis, George Mitchell.	Kingston.
Loftus, John.	West Kingston.



Mason, Howard, Mech. Eng.	Pawtucket.
May, Cyril Mercer, Mech. Eng.	East Greenwich.
Mounce, Harry Lyden, Agr.	North Marshfield, Mass.
Northup, John T., Poultry.	Apponaug.
O'Neil, John Brooks.	New London, Conn.
Price, Milton Harris, Agr.	Providence.
Quintero, Carlos, Agr.	Panama, Panama.
Robinson, Eben George, Agr.	Edgewood.
Steck, Frank, Chem. Eng.	Kingston.
Tucker, Myron Griffin, Mech. Eng.	Wakefield.
Tully, William Henry, Appl. Sci.	Peace Dale.
Tyler, Earl Albert, Chem. Eng.	Centreville.
Webb, William Henry, Elec. Eng.	Howard.
Whittaker, LeRoy Allen, Elec. Eng.	Central Falls.
Wilcox, Erroll Kenyon, Civ. Eng.	Norwich Town, Conn.

### Two-Year.

Brindle, Robert, Jr., Mech. Eng.	Woonsocket.
Carroll, Frank Aurthur, Agr.	Woonsocket.
Chappell, Henry Browning, Agr.	Saunderstown.
Goddard, Franklin Perry, Mech. Arts.	Newport.
Goodechild, Beulah Florence, Dom. Sci.	Providence.
Greene, James Taylor, Agr.	Wickford.
Halliday, Robert Crossley, Agr.	Pawtucket.
Henderson, Samuel James, Mech. Eng.	Hingham Center, Mass.
Hubbard, Allene Frances, Dom. Sci.	Woonsocket.
Hull, Benjamin, Agr.	West Kingston.
Hurlbut, Harold, Agr.	Plantsville, Conn.
Jones, Harold Corbin, Agr.	Providence.
Knox, Roy Francis, Mech. Arts.	Warwick.
Martin, Raul E., Agr.	Washington, D. C.
Norgaard, Jakobi, Dom. Sci.	Longmeadow.
Peters, George Albert, Agr.	Kingston.
Swift, Howard Erastus, Mech. Arts.	Lee, Mass.
Tefft, Helen Macy, Dom. Sci.	Jamestown.
Waller, Mary Robinson, Dom. Sci.	Washington, D. C.
Webb, George Henry, Agr.	Pawtucket.
Weir, Millie Elizabeth, Dom. Sci.	Providence.
Weston, Richard Ward, Agr.	West Bridgewater, Mass.

### Poultry-Keeping.

Allen, Harrison P.	Grand Isle, Vermont.
Bodulich, William.	West Philadelphia, Pa.
Britten, Emily Adelaide.	Woodford, England.
Cory, Charles W., Jr.	Melville.
Dodge, Hiram Alfred.	Harrisville.

Fisher, John Leroy	Providence.
Fordham, Austin Lyle	Saxton's River, Vt.
Gillins, James Edward	Brooklyn, New York.
Greene, James Taylor	Wickford.
Green, Esther Follansbee	Pascoag.
Green, M. Louise	New Haven, Conn.
Harrington, Lewis Lowe	Lunenburg, Mass.
Hough, Earl M.	East Greenwich.
Hurlbut, Harold	Plantsville, Conn.
Juvenal, A. B.	New Rochelle, New York.
Jenks, Lena M.	Woonsocket.
Kenyon, George C.	Hopkinton.
Migneault, Charles F., Jr.	Woonsocket.
Morse, Orville	Shelton, Conn.
Parkhurst, Irving B.	Everett, Mass.
Pyper, Myrtle Adele	Conimicut.
Reichl, Robert	Philadelphia, Pa.
Silva, Frank L.	Waynesboro, Virginia.
Smith, Rufus S.	Hackensack, N. J.
Staley, Edwin G.	New York, N. Y.
Thomas, Ernest Kinsey	Kingston.
Tillinghast, Esther C.	Providence.
White, Robert Spencer	Providence.

### Summer School.

Beith, Emily P.	West Philadelphia, Penn.
Beirne, Alice	Providence.
Brown, Amey S.	South Scituate.
Clark, Gertrude M.	Providence.
Cushman, Louisa	Pawtucket.
Davis, Susie E.	Assonet, Mass.
Greene, Bertha L.	Woonsocket.
Hendrick, Maude H.	Woonsocket.
Hurley, Katherine M.	Providence.
Hurley, Lila	Providence.
McGunnagle, John A.	Central Falls.
McGovern, F. J.	Providence.
Miller, Marie	Providence.
Nevin, David D.	Providence.
Pettis, Sybil	Thompson, Conn.
Peckham, Elizabeth A.	Newport.
Pyper, Myrtle Adele	Conimicut.
Sweet, Sarah L.	Providence.
Tucker, Ellen Capron	Kingston.
Tucker, Ethel Aldrich	Kingston.
Walton, Thomas A.	Hope

Warner, Florence A.....	Central Falls.
Whiting, Elmira E.....	Pawtucket.
Wilber, Sarah M.....	West Kingston.

Graduate students.....	3
Seniors.....	17
Juniors.....	27
Sophomores.....	46
Freshmen.....	58
Irregulars.....	29
Two-Year Courses.....	22
Poultry Students.....	28
Summer School.....	24

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Total number of students (none counted twice)..... : 51

## Graduates.\*

1894.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ADAMS, GEORGE EDWARD . . . Kingston.	Agr.	Chief of Dept. of Agriculture and Professor of Agronomy, R. I. S. C.
AMMONDS, GEORGE CLARENCE . . 5 Boylston Place, Boston, Mass.	Mech.	Railroad Postal Clerk, on N. Y., N. H. & H. R. R.
ARNOLD, CHAPIN TRAFFORD . . . 52 Wood St., Providence.	Agr.	Electrical Contractor, Office 26 Custom House St., Providence.
BURLINGAME, GEO. WASHINGTON . R. F. D. No. 2, Box 56, North Scituate.	Agr.	Farmer and Teacher.
CLARK, HELEN MAY (MRS. WM. F. B. LEAVITT), B. L., Smith Col- lege, 1899. Essex Fells, New Jersey.		At home.
KNOWLES, JOHN FRANKLIN . . . Kingston.	Mech.	With contractor John Bristow.
†MADISON, WARREN BROWN . . .	Agr.	
MATHEWSON, ERNEST HOXSIE . . Ph. B., Brown University, 1896. Reidsville, North Carolina.	Mech.	Crop Technologist in Tobacco, U. S. Department of Agriculture.
PECKHAM, REUBEN WALLACE . . . Melville Station, Newport.	Agr.	Market Gardener.
RATHBUN, WILLIAM SHERMAN . . . Northampton, Mass.	Agr.	With Printing Department, Eureka Ruling and Binding Co., Holy- oke, Mass.
RODMAN, GEORGE ALBERT . . . New Haven, Conn.	Mech.	Inspector, Bridges and Buildings, Room 24, General Office Bldg., N. Y., N. H. & H. R. R. Co.
SARGENT, CHARLES LAWRENCE . . Ph. D., University of Pennsylvania, 1900. 9 Thomas St., Newark, New Jersey.	Agr.	Chemist, Murphy Varnish Co.
SLOCUM, SAMUEL WATSON . . . 130 West Broad St., Westerly.	Agr.	Carpenter.
SPEARS, JOHN BARDEN . . . Foster Centre.	Agr.	Rural Letter Carrier.

\*It is earnestly desired that graduates inform the college office of any permanent change of address.

† Deceased.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
SWEET, STEPHEN ADELBERT . . . Slocums.	Agr.	Farmer.
TUCKER, GEORGE MASON . . . Ph. D., Göttingen, 1899. North Scituate.	Agr.	Farmer.
WILBUR, ROBERT ARTHUR . . . East Greenwich.	Mech.	Express Agent.

## 1895.

ALBRO, LESTER FRANKLIN . . . 34 Plaza St., Brooklyn, N. Y.	Agr.	With Packard Motor Car Co.
BURDICK, HOWLAND . . . Kingston.	Agr.	Instructor in Dairying, R. I. S. C.
CLARKE, CHARLES SHERMAN . . . Jamestown.	Mech.	Marine Engineer.
ELDRED, MABEL DEWITT . . . Kingston.		Instructor in Drawing, R. I. S. C.
HAMMOND, JOHN EDWARD . . . Jamestown.	Agr.	Farmer.
OATLEY, LINCOLN NATHAN . . . Wakefield.	Mech.	Contractor and builder; Coal Dealer.
SCOTT, ARTHUR CURTIS . . . Ph. D., Univ. of Wisconsin, 1902. Dallas, Texas.	Mech.	President, Scott Engineering Co., 632 Wilson Building.
TEFFT, JESSE COTTRELL . . . Jamestown.	Mech.	Purser, Newport and Jamestown Ferryboat Co.
WINSOR, BYRON EDGAR . . . Coventry.	Mech.	Poultryman.

## 1896.

BROWN, MAY (Mrs. CHARLES A. WHITE). Narragansett Pier.		At home.
GREENMAN, ADELAIDE MARIA (Mrs. R. WALLACE PECKHAM) . Melville Station, Newport.		At home.
KENYON, ALBERT LEWIS . . . 35 Chestnut St., South Manchester, Conn.	Mech.	
MOORE, NATHAN LEWIS CASS . . . Venice, Florida.	Agr.	Fruit-Grower, citron culture.
TABOR, EDGAR FRANCIS . . . 69 Doyle Ave., Providence.	Mech.	Calico Printer, U. S. Finishing Co., Silver Spring Branch.
*WILLIAMS, JAMES EMERSON . . .	Agr.	

\* Deceased.



## 1897.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CARMICHAEL, WELCOME SANDS . Shannock.	Sci.	Bookkeeper, Providence Journal Co., Providence.
CASE, HERBERT EDWARDS BROWN . Ph. B., Brown University, 1900. Graduate, Hartford Theological Seminary, 1904. 14 Beacon St., Boston, Mass.	Mech.	Assistant Secretary, Foreign Department, Amer. Board of Commissioners for Foreign Missions.
GRINNELL, ARCHIE FRANKLIN . R. F. D. No. 1, Charlton, Mass.	Mech.	Draftsman, American Optical Co.
HANSON, GERTRUDE MAIE . . . Kingston.	Sci.	Teacher.
HOXSIE, BESSIE BAILEY (Mrs. E. F. RUECKERT) . . . 98 Melrose St., Providence.	Sci.	At home.
KENYON, ALBERT PRENTICE . . . 10 West St., Westerly.	Mech.	Bookkeeper, Maxson & Co., Westerly.
KENYON, CHARLES FRANKLIN . . Shannock.	Mech.	Engineer, White Bros., White Valley, Mass.
LARKIN, JESSIE LOUISE . . . . 98 Beach St., Westerly.	Sci.	Genealogist.
*MARSLAND, LOUIS HERBERT . .	Mech.	
TEFFT, ELIZA ALICE . . . . .	Sci.	Teacher, East Greenwich.
1 Stanton St., Westerly.		
THOMAS, IRVING . . . . .	Mech.	Designer of Patterns.
Slocums.		

## 1898.

ARNOLD, SARAH ESTELLE (Mrs. R. O. BROOKS) . . . . .	Sci.	At home.
975 East 18th St., Brooklyn, N. Y.		
BARBER, GEORGE WASHINGTON . .	Agr.	With Glendora Heights Orange and Lemon Growers Association.
Glendora, Cal.		
CARGILL, EDNA MARIA (Mrs. LESTER H. BROWN) . . .	Sci.	At home.
4 Highland Ave., Lonsdale.		
CASE, JOHN PETER . . . . .	Agr.	Mgr., San Francisco Office, Brown Hoisting Machinery Company.
251 Monadnock Bldg., San Francisco, Cal.		
CLARK, WILLIAM CASE . . . . .	Sci.	Secretary and Gen. Mgr. Sea-View Railroad Co. and Narragansett Pier Elec. Light and Power Co.; Mgr. Wickford Light and Water Co.
Wakefield.		
CONGDON, HENRY AUGUSTUS . .	Mech.	Farmer.
Kingston.		

NAME AND ADDRESS.	COURSE.	OCCUPATION.
FLAGG, MARTHA REBECCA . . . Hardwick, Mass.	Sci.	At home.
HARLEY, WILLIAM FERGUSON . . . 62 Hillside Ave., Providence.	Agr.	Salesman, with Messrs. Callender, McAuslan & Troup, Providence.
TURNER, HARRIETTE FLORENCE (MRS. GEO. M. TUCKER) . . . Graduate, Drexel Institute, 1900. North Scituate.	Sci.	At home.
WILSON, GRACE ELLEN (MRS. W. F. HARLEY) . . . 62 Hillside Ave., Providence.	Sci.	At home.

## 1899.

BOSWORTH, ALFRED WILLSON . . . 6 Perry St., Boston, Mass.	Sci.	Graduate Student, Harvard University.
BROOKS, RALPH ORDWAY . . . 975 East 18th St., Brooklyn, N. Y.	Sci.	Consulting Chemist, Bacteriologist, Microscopist, Food-Inspection Expert, 191 Franklin St., New York City.
GEORGE, LILLIAN MABELLE . . . A. B., Univ. Ill., 1904. Graduate, N. Y. State Library School, 1910. 220 Waldron St., West Lafayette, Indiana.	Sci.	Cataloguer, Purdue University Library.
HARVEY, MILDRED WAYNE (MRS. WM. H. BLISS) . . . 76 W. 94th St., New York City.	Sci.	At home.
KENYON, BLYDON ELLERY . . . 228 Union St., Schenectady, N. Y.	Agr.	Draughtsman, General Electric Co.
KNOWLES, CARROLL . . . 127 Hamilton St., Providence.	Mech.	Tool Designer, Brown & Sharpe Mfg. Co.
KNOWLES, HARRY . . . Ph. B., Brown University, 1906. 1182 Broad St., Newark, N. J.	Sci.	Reporter, Newark Sunday Call.
LADD, MERRILL AUGUSTUS . . . Third National Bank Bldg., Atlanta, Ga.	Mech.	Sales Agent, Supply Dept., General Electric Co.
MORRISON, CLIFFORD BREWSTER . . . 543 Broad St., Providence.	Sci.	Chemist.
OWEN, WILLIAM FRAZIER . . . Schenectady, N. Y.	Mech.	Engineering Department, General Electric Co.
PAYNE, EBENEZER . . . M. D., Univ. Michigan, 1904. Glendora, Cal.	Sci.	Orange Grower.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
PHILLIPS, WALTER CLARKE . . Ph. B., Brown University, 1902. A. M., Brown University, 1903. 325 Livingston Hall, New York City.	Mech.	Graduate Student, Columbia University.
REYNOLDS, ROBERT SPINK . . Room 314, Gen. Office Bldg., New Haven, Conn.	Mech.	Assistant Engineer, Bridge Dept., N. Y., N. H. & H. R. R. Co.
RICE, MINNIE ELIZABETH (MRS. ROBERT J. SHERMAN) . . Exeter Hill.	Sci.	At home.
SHERMAN, ABBIE GERTRUDE (MRS. BENJAMIN BARTON) . . 56 Pavilion Ave., Providence.	Sci.	At home.
*SHERMAN, GEORGE ALBERT . .	Mech.	
THOMPSON, SALLY RODMAN (MRS. LEWIS BALCH, JR.) . . Wakefield.	Sci.	At home.

## 1900.

BRIGHTMAN, HENRY MAXSON . . 50 Church St., New York City.	Mech.	Heating and Ventilating Engineer with B. F. Sturtevant Co.
CROSS, CHARLES CLARK . . . Detroit, Mich.	Mech.	Supt. of Inspection, Chalmers Motor Co.
ELDRED, JOHN RALEIGH . . . Kingston.	Mech.	Instructor in Mechanical Engineering, R. I. S. C.
FISON, GERTRUDE SARAH (MRS. JOHN W. ROOT) . . . Malden, Mass.	Sci.	At home.
FRY, JOHN JOSEPH . . . . . A. B., Oberlin, 1904. Coscob, Conn.	Mech.	Principal, Coscob School.
GODDARD, EDITH (MRS. LAWRENCE B. REED) . . 10 North St., Plymouth, Mass.	Sci.	At home.
KENYON, AMOS LANGWORTHY . . Wood River Junction.	Agr.	Dairyman.
MUNRO, ARTHUR EARLE . . . Ph. B., Brown University, 1902. 41 George St., Providence.	Sci.	Attorney-at-Law, 49 Westminster St.
SOULE, RALPH NELSON . . . . 488 Montclair Ave., Detroit, Mich.	Sci.	
STEERE, ANTHONY ENOCH . . . Waterloo, N. Y.	Mech.	Resident Engineer, charge Resi- dency No. 3, New York State Barge Canal.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
STILLMAN, LENORA ESTELLE . . . 1229 Gates Ave., Brooklyn, N. Y.	Sci.	Teacher.
TUCKER, BERTHA DOUGLASS . . . R. F. D. No. 2, Box 105, Swansea, Mass.	Sci.	Dressmaker.
WHEELER, CHARLES NOYES . . . 97 Garden St., Pawtucket.	Sci.	Clerk, Wm. H. Haskell Manufacturing Co.
WILSON, JOSEPH ROBERT . . . Allenton.	Mech.	Surveyor, Alberta, Canada.

## 1901.

BRAYTON, CHARLES ANDREW . . . Hope, R. F. D.	Agr.	Farmer.
BRIGGS, NELLIE ALBERTINE . . . Providence.	Sci.	Stenographer, R. I. Hospital Trust Co.
BURGESS, CHARLES STUART . . . 264 Sayles St., Providence.	Mech.	Draughtsman, Brown & Sharpe Mfg. Co.
CLARNER, LOUIS GEORGE KARL, JR. Arnold's Mills.	Sci.	Farmer.
DAWLEY, EDNA ETHEL . . . Kenyon.	Sci.	Traveling for F. E. Compton & Co.
DENICO, ARTHUR ALBERTUS . . . 40 Park Ave., Bloomfield, N. J.	Sci.	With American Telephone and Telegraph Co., Traffic Dept.
*JAMES, RUTH HORTENSE (Mrs. HERBERT E. ROUSE) . . .	Sci.	
SHERMAN, ANNA BROWN . . . 49 Roger Williams Ave., Providence.	Sci.	Publisher.
SHERMAN, ELIZABETH AGNES . . . 424 Mass. Ave., Boston, Mass.	Sci.	Secretary to Research Chemist, Arthur D. Little, Inc., Boston.
SMITH, HOWARD DEXTER . . . A. M., Brown University, 1904. Ph. D., Tufts College, 1906. 14 Holden St., Lowell, Mass.	Sci.	Instructor in Chemistry, Lowell Textile School.
STEERE, ROWENA HOXSIE . . . 98 Fifield St., Providence.	Sci.	Stenographer.
WILBY, JOHN . . . Flat River, Missouri.	Sci.	Supply Clerk, Central Lead Co.

## 1902.

CLARKE, LATHAM . . . A. M., Brown University, 1903. Ph. D., Harvard University, 1905. Boylston Hall, Cambridge, Mass.	Chem.	Instructor in Chemistry, Harvard University.
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NAME AND ADDRESS.	COURSE.	OCCUPATION.
FERRY, OLIVER NEEDHAM . . . 217 Sackett St., Providence.	Mech.	In charge of Production Dept., Maxwell-Briscoe Motor Co.
MAXSON, RALPH NELSON . . . Ph. D., Yale University, 1905. 366 Transylvania Park, Lexington, Ky.	Chem.	Professor Inorganic Chemistry, State University.
PITKIN, ROBERT WILLIAM . . . Rockville, Conn., R. F. D. No. 1.	Mech.	Farmer.

## 1903.

BARBER, KATE GRACE (MRS. A. L. WINTON) . . . Ph. D., Yale University, 1906. 1607 Heisen Bldg., Chicago. Ill.	Gen. Sci.	Investigations in Vegetable Histo- logy.
CONANT, WALTER AIKEN . . . Temple, N. H.	Agr.	Dairying, The Conant and Clem- ent Farms, Hillsboro County.
GODDARD, WARREN, JR. . . . Graduate, New Church Theo- logical School, 1907. 212 Maple St., La Porte, Indiana.	Mech.	Pastor, New Church.
KEEFER, EDITH CECILIA . . . 63 West 48th St., N. Y. City.	Biol.	Teacher of Mathematics, Miss Spence's School.
KENT, RAYMOND WARREN . . . A. M., Harvard University, 1904. 171 Dodge Ave., Akron, Ohio.	Chem.	Chemist, Diamond Rubber Co.
TEFFT, ERNEST ALLEN . . . 36 Pratt St., Providence.	El. Eng.	Electrical Contractor.

## 1904.

BALLOU, WILLARD ALGER . . . 332 Lafayette Ave., Brooklyn, N. Y.	Biol.	Instructor in Mathematics, Pratt Institute.
QUINN, MARY LOUISE . . . 71 Decatur St., Cumberland, Md.	Biol.	Teacher of Science, Allegany Co. High School.
RODMAN, WALTER SHELDON . . M. S., R. I. C. A. & M. A., 1907. Wertland St., University, Va.	El. Eng.	Adjunct Professor of Electrical Engineering, University of Virginia.

## 1905.

CHAMPLIN, SARAH ELIZABETH . 63 Carolina Ave., Providence.	Gen. Sci.	Bookkeeper, Burt Mfg. Co., 226 Eddy St.
DOW, VICTOR WELLS . . . Hampton, Va.	High. Eng.	Draftsman, Hampton Institute.



NAME AND ADDRESS.	COURSE.	OCCUPATION.
GILMAN, JEAN . . . . Hampton, Va.	High. Eng.	Assistant to Director of Trade School, Hampton Institute.
HARRALL, NELLIE ARMSTRONG . Graduate, Sargent School of Physical Education, 1909. Kingston.	Gen. Sci.	Instructor in Physical Training, R. I. S. C.

## 1906.

ARNOLD, BENJAMIN HOWARD . . 32 Vine St., Lynn, Mass.	El. Eng.	Gas Engine Engineering Dept., General Electric Co.
BERRY, WALLACE NOYES . . . Albuquerque, New Mexico.	El. Eng.	With Albuquerque Gas, Electric Light and Power Co.
ELKINS, MARION GRAHAM . . . 10 Moody St., Amesbury, Mass.	Gen. Sci.	Graduate Student, Yale Univer- sity.
HARDING, LEE LAPLACE . . . Lyme, Conn.	High. Eng.	Instructor in Mathematics, Conn. Literary Institution, Suffield, Conn.
KEYES, FREDERICK GEORGE . . . Sc. M., Brown Univ., 1907. Ph. D., Brown Univ., 1909. Boston, Mass.	Chem.	Instructor in Theo. Chem. and Re- search Associate in Research Laboratory, Mass. Institute of Technology.
NICHOLS, HOWARD MARTIN . . . 71 Federal St., Boston, Mass.	El. Eng.	Salesman, Richmond Sales Co.
SISSON, CORA EDNA . . . . . M. S., Brown Univ., 1910. Wickford.	Gen. Sci.	Teacher.
WILKINSON, ALBERT EDMUND . . Lyndon Centre, Vermont.	Agr.	Horticulturist, Lyndon Institute.

## 1907.

BARBER, ARTHUR HOUGHTON East Greenwich.	Mech. Eng.	In business.
COGGINS, CALVIN LESTER . . . Hoboken, N. J.	El. Eng.	Instructor in Physics, Stevens Institute of Technology.
FERRY, JAY RUSSELL . . . . . 525 West 160th St., New York City.	High. Eng.	Draughtsman for Post & McCord, 44 East 23d St., New York City.
KELLOGG, DAVID RAYMOND . . . 1559 Highland St., Columbus, O.	Chem.	Instructor in Chemistry, Ohio State University.
KENDRICK, WINFIELD SMITH . . 34 Wendell Ave., Schenectady, N. Y.	EL. Eng.	Sales Engineer, General Electric Co.
LAMOND, JOHN KENYON . . . . M. A., Yale Univ., 1908. Ph. D., Yale Univ., 1910. 5 Stowe Ave., Middletown, Conn.	El. Eng.	Instructor in Mathematics, Wes- leyan University.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
LEWIS, HARRY REYNOLDS . . . 17 Jones Ave., New Brunswick, N. J.	Agr.	Prof. Dairying and Poultry Husbandry, Rutgers College.
MACOMBER, MINER SANFORD . . . 50 East 41st St., New York City.	Chem.	Chemist.
TUCKER, ETHEL ALDRICH . . . Kingston.	Gen. Sci.	Primary Teacher, Lippitt Hill School, Hope, R. F. D.

## 1908.

DREW, JOSEPH DRAKE . . . Ensley, Alabama.	Chem.	In Laboratory, Tenn. Coal, Iron & R. R. Co.
FIELD, CLESSON HERBERT . . . C. E., Lehigh Univ., 1909. 3719 Locust St., Phila., Pa.	Civ. Eng.	With Designing and Estimating Dept., Schuylkill Bridge Works.
FISKE, HERBERT ANDREW . . . 24 South Elm St., West Lynn, Mass.	El. Eng.	With General Electric Co.
GARDINER, ROBERT FRANKLIN . . . 1407 Chapin St., Washington, D. C.	Chem.	Asst. Chemist, Bureau of Soils, U. S. Dept. of Agriculture.
GORY, EDWARD ALLEN . . . 312 Shawmut Ave., Boston, Mass.	El. Eng.	Electrical Repair Work.
KENYON, SUSAN ELNORA (MRS. FRED K. CRANDALL) . . . Westerly.	Biol.	At home.
MITCHELL, CLOVIS WILLIAM . . . 248 Montauk Ave., New London, Conn.	Civ. Eng.	Teacher, Mathematics and Science, Manual Training High School.
ROSE, ORPHA LILLIE . . . Peace Dale, R. F. D.	Gen. Sci.	Teacher.
SHELDON, GEORGE WARE . . . 6039 Hoeveler St., Pittsburgh, Pa.	El. Eng.	Student Apprentice, Westinghouse Electric Co.
SHERMAN, MARY ALBRO . . . Lehigh Hill, Portsmouth.	Agr.	Teacher, R. F. D., West Kingston.
SMITH, JOHN LEBROC . . . Wakefield.	El. Eng.	Instructor in Science, Cranston High School.
WHIPPLE, LUCIUS ALBERT . . . Greenville.	Civ. Eng.	Teacher, Mathematics and Physical Science, High School, Pawtucket.

## 1909.

CARGILL, RHOBIE LUCELIA . . . Abbott Run.	Appl. Sci.	Teacher of Science and Mathematics, High School, 51 School St., Groveland, Mass.
--	------------	--

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CRAIG, JAMES McINTYRE . . . Arsenida de Mayo, 605 Buenos Aires, Argentine.	Agr.	Gardener.
CRANDALL, FRED KENYON . . . R. F. D. No. 1, Westerly.	Agr.	Farmer.
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HOWE, ALBERT MENDEL . . . 741 Pleasant St., Brockton, Mass.	El. Eng.	Asst. Stock Inspector, Bay State St. Ry. Co., Campello.
KNOWLES, WALTER . . . 127 Hamilton St., Providence.	Civ. Eng.	Construction Dept., N. Y. N. H. & H. Railroad.
LEE, ALFRED ROGERS . . . Washington, D. C.	Agr.	Junior Animal Husbandman, in Poultry Investigations, Bureau of Animal Industry, U. S. Dept. of Agriculture.
MORAN, WALTER JOHN . . . 299 West Main St., Waterbury, Conn.	Civ. Eng.	Civil Engineer, N. Y., N. H., & H. R. R. Co.
MOYER, LOUIS EARL . . . Seneca Falls, N. Y.	Civ. Eng.	Dept. State Engineer, Barge Canal Office.
ROCKWELL, RUBY BELLE . . . North Bennington, Vermont.	Chem.	Instructor in Mathematics, High School.
SMITH, ELMER FRANCIS . . . Essex Fells, New Jersey.	El. Eng.	Head of Science Dept., and Athletic Coach, Kingsley School.
TISDALE, HARRY ROBERT . . . Mass. Inst. Technology, 1911, Box 263, New London, Conn.	Chem.	Chemist, Brainerd & Armstrong, Silk M'f'rs.
TUCKER, ELLEN CAPRON . . . Kingston.	Gen. Sci.	Student, R. I. State Normal School.

## 1910.

BURGESS, PAUL STEERE . . . 310 E. Green St., Champaign, Ill.	Chem. Eng.	Graduate student, University of Illinois.
CARPENTER, RANDOLPH HAYWOOD . . . 165 Broadway, New York City.	El. Eng.	In Sales Dept., Westinghouse Electric & Mfg. Co.
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GOODALE, RALPH WALDO . . . 24 College St., New Haven, Conn.	Civ. Eng.	With N. Y., N. H. & R. R. Co.
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NAME AND ADDRESS.	COURSE.	OCCUPATION.
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LAMOND, HELEN SCOTT . . Usquepaug.	Gen. Sci.	Teacher, Kenyon.
MOUNCE, LEROY LEIDMAN . . Pocantico Hills, N. Y.	Agr.	
PEABODY, GEORGE ABBOTT . 310 Clinton St., Schenectady, N. Y.	El. Eng.	Electrical Test Engineer, with General Electric Co.
SHERMAN, JOHN LELAND . . Mansfield, Mass.	Agr.	Farmer.
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WHEELER, RICHARD HOWES . Box 982, Schenectady, N. Y.	El. Eng.	Electrical Test Engineer, with General Electric Co.
WORRALL, DAVID ELBRIDGE . M. A., Harvard Univ., 1911. Guantanamo, Cuba.	Chem.	Chemist, Solidad Estate, Guanta- namo Sugar Co.

## 1911.

ANDREWS, CARMEN NICHOLS . Slocum.	Appl. Sci.	Teacher.
ANGILLY, CHARLES ENOCH, JR. Manila, P. I.	Civ. Eng.	Third Lieutenant, Philippine Con- stabulary.
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EASTERBROOKS, LOUIS CHURCH . 280 Benefit St., Providence.	Agr.	With F. Macrea & Sons, Florists, 1178 Smith St.
GILCHREST, CLYDE RONALD . Bachelor Hall, Wilkinsburg, Pa.	Elec. Eng.	
HARRIS, BURTON KENNETH . Lime Rock.	Chem. Eng.	Sales Agent and Chemist for Lime Manufacturer.
HEALY, PATRICK JOSEPH . . . Mahwah, New Jersey.	Agr.	Head Gardener, with H. O. Have- meyer.
KENT, ROBERT WILLARD . . 48 Eden Park, Quincy, Mass.	Mech. Eng.	Draftsman, Fore River Shipbuild- ing Co.
MINOR, ARTHUR JACOB . . Concord, N. H.	Civ. Eng.	In Maintenance of Way Dept., Boston & Maine R. R.
NEAL, WILLIAM THOMAS . . . Walton, New York.	Agr.	Proprietor Tripp Greenhouse Com- pany.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ROBINSON, BENJAMIN ROWLAND 23 Linden St., Bayonne, New Jersey.	Mech. Eng.	Testing Dept., Experimental Oil Burning, Babcock & Wilcox Co.
RUPRECHT, RUDOLF WILLIAM . Amherst, Mass.	Appl. Sci.	Asst. Research Chemist, Agr. Ex- periment Station.
SAFFORD, HOWARD ALBERT . . . 113 Providence St., Providence.	Agr.	
TUCKER, HARRIET TABER . . . West Kingston.	Gen. Sci.	Teacher.
WADE, CEYLON RAYMOND . . . 921 Howard Ave., New Haven, Conn.	Civ. Eng.	With N. Y., N. H. & H. R. R.

## Advanced Degrees.

### MASTER OF SCIENCE.

#### 1907.

RODMAN, WALTER SHELDON (B. S., R. I. State College, 1904). University of Virginia.	Adjunct Professor of Electrical Engineering, University of Vir- ginia.
--	--

#### 1910.

WHITING, ALBERT LEMUEL (B. S., Mass. Agr. College, 1908).	Graduate Student, University of Illinois, Urbana, Illinois.
--	--

#### 1911.

HAMMETT, FREDERICK SIMONS (A. B., Tufts College, 1908) Kingston.	Assistant, Chemistry Div., Experi- ment Station, Rhode Island State College.
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BULLETIN OF RHODE ISLAND STATE COLLEGE.

VOL. IX. NO. 1.

FOR MAY, 1913.

CATALOGUE OF THE COLLEGE.



REPORT OF BOARD OF MANAGERS--PART III.

KINGSTON, R. I.

1913.

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# TWENTY-FIFTH ANNUAL REPORT

OF THE

BOARD OF MANAGERS

OF

# RHODE ISLAND STATE COLLEGE,

MADE TO THE

General Assembly at the January Session, 1913.

## PART III—CATALOGUE.

Part I—General Report—printed under separate cover.

Part II—Experiment-Station Report—printed under separate cover.

Providence, R. I.

E. L. Freeman Company, State Printers.

1913.





## Rhode Island State College.

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### Corporation.

HON. ROBERT S. BURLINGAME.....	NEWPORT COUNTY.
HON. CHARLES ESTES.....	BRISTOL COUNTY.
HON. CHARLES DEAN KIMBALL.....	PROVIDENCE COUNTY.
HON. THOMAS G. MATHEWSON.....	KENT COUNTY.
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HON. PHILIP A. MONEY.....	MEMBER OF STATE BOARD OF AGRICULTURE.

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MISS CLARA A. OLNEY.....	HOPE VALLEY.
MRS. FLORENCE G. R. SWEETLAND.....	PROVIDENCE.

## Report.

---

*To His Excellency Aram J. Pothier, Governor, and the Honorable General Assembly of the State of Rhode Island and Providence Plantations, at its January Session, 1913:* .

I have the honor to submit herewith Part Three of the Twenty-Fifth Annual Report of the Board of Managers of Rhode Island State College, as required by law.

CHARLES DEAN KIMBALL,

*President of the Board of Managers of Rhode Island State College.*

## Faculty and Other Officers.

---

HOWARD EDWARDS, A. M., LL. D.,

PRESIDENT,

*Professor of Political Economy and Social Science.*

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*Professor of Botany and Secretary of the Faculty.*

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JOHN BARLOW, A. M.,

*Professor of Zoölogy.*

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*Professor of Mathematics.*

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ANDREW EDWARD STENE, M. S.,

*Superintendent of College Extension.*

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*Chief of Department of Engineering and Professor of Mechanical Engineering.*

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*Instructor in Dairying.*

DANIEL JOSEPH LAMBERT,

*Instructor in Poultry Keeping.*

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*Instructor in Mechanical Engineering.*



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*Instructor in Mathematics and Civil Engineering.*

NELLIE ARMSTRONG HARRALL, B. S.,

*Instructor in Physical Training for Women.*

FREDERICK JOSEPH GODIN,

*Instructor in Horticulture.*

J. STANLEY BEAMENS DERFER, A. M., M. E.,

*Instructor in Mechanical Engineering.*

MAURICE BROWN GREENOUGH, B. S.,

*Instructor in Mechanical Engineering.*

GLADYS ELSIE BURLINGAME, A. B.,

*Librarian.*

LUCY COMINS TUCKER,

*Registrar and Secretary to the President.*

ALICE ELIZABETH BEALE,

*Bursar.*

JENNIE CRANDALL THOMPSON,

*Bookkeeper.*

GERTRUDE MABEL BURDICK,

*Bookkeeper.*

## Lectures.

### Poultry Course.

---

- E. W. Brown, Old Mystic, Conn., POULTRY BREEDING. MARKETING POULTRY PRODUCTS. Two lectures.
- E. J. W. Dietz, Chicago, Ill., ADVERTISING POULTRY AND POULTRY ADVERTISERS. Two lectures.
- F. L. Sewell, Niles, Mich., STANDARD POULTRY, Illustrated. Two chalk talks.
- J. L. Nix, Homer City, Pa., ARTIFICIAL INCUBATION AND BROODING. Three lectures.
- Dr. P. B. Hadley, Kingston, R. I., MENDELISM AND MENDELIAN INHERITANCE IN POULTRY. Two lectures.
- Samuel Knowles, Lexington, Mass., A ONE MAN POULTRY BUSINESS.
- A. C. Goddard, Kingston, R. I., COCCIDIOSIS IN TURKEYS AND OTHER POULTRY.
- William H. Kirkpatrick, Storrs, Conn., EGG LAYING CONTESTS, METHODS OF HOUSING AND FEEDING. Two lectures.
- C. H. Magoon, Kingston, R. I., INTENSIVE AND EXTENSIVE POULTRY PLANTS.
- Henry D. Smith, Rockland, Mass., CAPONS AND CAPONIZING. Two lectures and demonstration.
- Thomas F. Dexter, Providence, R. I., LEGHORNS.
- George A. Peters, Shirley, Mass., THINGS I WOULD NOT DO AGAIN IN THE POULTRY BUSINESS.
- W. H. Withington, Bridgewater, Mass., A BUSINESS HEN FROM A FANCIER'S STANDPOINT.
- H. W. Rickey, Kingston, R. I., INCUBATION, BROODING AND REARING CHICKENS. Two lectures.
- Howland Burdick, Kingston, R. I., CLEAN MILK.
- Prof. Harry R. Lewis, New Brunswick, N. J., ESSENTIALS IN EGG PRODUCTION, POULTRY HOUSING AND FEEDING. Two lectures.
- Dr. N. W. Sanborn, Holden, Mass., FROM MARCH TO FEBRUARY WITH HENS AND CHICKS.
- 

### Farmers' Week.

---

- W. H. Ingling, Monmouth County, New Jersey, THE MARKETING OF FARM PRODUCE.
- J. M. Trueman, Connecticut Agricultural College, Storrs, Conn., COST OF MILK PRODUCTION.
- E. H. Thomson, Office Farm Management, U. S. Department of Agriculture, FARM MANAGEMENT.

## Experiment-Station Staff.

---

HOWARD EDWARDS, M. A., LL. D.....	{ President of the College. <i>Ex-officio</i> Member.
BURT L. HARTWELL, Ph. D*.....	Director; Chemistry.
PHILIP B. HADLEY, Ph. D.....	Biology.
P. H. WESSELS, M. S.....	Assistant, Chemistry.
ROBERT A. LICHTENTHAELER, M. S.....	Assistant, Chemistry.
F. O. FITTS, B. S.....	Assistant, Chemistry.
L. A. MAYNARD, A. B.....	Assistant, Chemistry.
F. R. PEMBER, M. S.....	Assistant, Plant Physiology.
S. C. DAMON, B. S.....	Assistant, Agronomy.
G. E. MERKLE, B. S.....	Assistant, Agronomy and Chemistry.
DOROTHY WALCOTT CALDWELL, B. S.....	Assistant, Biology.
CARROLL H. MAGOON.....	Poultryman.
F. J. GODIN.....	Assistant, Floriculture.
NATHANIEL HELME.....	Meteorology.
E. ELIZABETH MEEARS.....	Stenographer and Librarian.
M. ALICE KIMBALL.....	Stenographer and Accountant.
H. ALIDA BIRCH.....	Stenographer.

---

*The publications of the Station will be mailed free, upon request, to residents of Rhode Island. Suggestions as to how the Station can aid the State are gladly received. Visitors are always welcome. Railway station, telegraph, express, and post-office—Kingston, Rhode Island. Long distance telephone, Narragansett Pier Exchange.*

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\*In charge of experiments in plant physiology.

## College Calendar.

---

Tuesday, September 16, 1913.....	Chapel Exercises, 8:20 A. M.
Registration, examination of entering and conditioned students, 9:00 A. M.	
Wednesday, September 17.....	Recitations begin, 8 20 A. M.
Monday, October 13.....	Columbus Day.
Wednesday, November 26, 12:00 M. }	Thanksgiving Recess.
Monday, December 1, 8:20 A. M. }	
Saturday, December 20, 12:00 M. }	Christmas Recess.
Monday, January 5, 1914, 8:20 A. M. }	
Tuesday, Wednesday, Thursday, Friday, December 30, 31, January 1, 2,	
.....	Farmers' Week.
Wednesday, February 4, 4:35 P. M.....	First Term Ends.
Monday, February 9, 8:20 A. M.....	Second Term Begins.
Registration, 8:20 A. M. Recitations begin, 1:00 P. M.	
Monday, February 23.....	Washington's Birthday.
Friday, April 10.....	Good Friday.
Friday, May 8.....	Arbor Day.
Saturday, May 30.....	Memorial Day.
Sunday, June 14.....	Baccalaureate Address.
Tuesday, June 16.....	Commencement Exercises.







## RHODE ISLAND STATE COLLEGE.

### Foundation.

The college is one of the so-called land-grant colleges. Of the purpose of these institutions Senator Morrill, the author of the national legislation which brought them into existence in all the states, says:

"The fundamental idea was to offer an opportunity in every state for a liberal and larger education to large numbers, not merely those destined to sedentary professions, but to those needing higher instruction for the world's business, for the industrial pursuits and professions of life." Again he says: "It was to give a chance to the industrial classes of the country to obtain a liberal education, something more than what was bestowed by our universities and colleges in general, which seemed to be based more on the English plan of giving education only to what might be called the professional classes, in law, medicine, and theology."

The college has also a well-defined investigative purpose in its experiment station, organized as a department of the college and endowed by the general government.

The resources of the college are as follows:

(1) The interest on \$50,000, which was the net amount received by the state from the sale of its scrip for 120,000 acres of land, granted by the general government in 1862. This fund came to the college in 1894.

(2) The annual appropriation of \$15,000 from the general government, under what is known as the Hatch Act of 1887. This fund is exclusively for experimental purposes.

(3) The annual appropriation of \$25,000 from the general government under the second Morrill Act of 1890. This fund is for teaching the subjects distinctly named and specified in the act, as

follows: "to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

(4) The funds coming from the general government to the state under the Adams Act of 1906, yielding each year \$15,000. This fund is exclusively for experimental purposes.

(5) The funds from the general government under the Nelson Amendment of 1907, amounting yearly to \$25,000. This amendment is simply an extension of the 1890 Morrill grant and carries the same restrictions.

(6) The annual maintenance fund from the state, of \$25,000, used for all the purposes for which the funds of the general government can not be used: *e. g.*, for extension work; for executive and administrative work; for heating, lighting and maintenance of buildings; for the teaching of modern language other than English; for the teaching of history and civics; for student labor, maintenance of grounds, roads, etc.

The college was founded in 1888 as an agricultural school. In 1892 it was incorporated as a college. The courses of study have been on a college basis since 1892; the requirements for a degree were raised in 1898; and the curriculum was again thoroughly revised during the years 1906-07 and 1907-08. The course in home economics for young women was introduced in 1908.

### Object and Organization.

The function of the Rhode Island State College is to aid in fostering the industrial life of the state, at least in so far as pertains to agriculture, manufactures, transportation, and home-making. This it does in three ways: 1. By the investigation and discovery of new truth more or less directly applicable in the industries. 2. By the direct distribution of industrial information to the people. 3. By the organization and administration of definite courses of instruction designed to fit young men and young women for effective work in the industrial pursuits.

The first of these duties is performed by the

## Experiment Station,

for a description of the work of which the reader is referred to the report of the director, constituting Part II of the report of the Board of Managers for the current year. A statement of its staff organization may be found on page 9 of this catalogue.

The experiment station takes part, also, in the second phase of the college activities, by distributing its bulletins to all that desire and apply for them. In order, however, more fully and directly to bring the college and its work into touch with the people, a

## College Extension Department,

has been organized, and is in active operation.

The purpose of this department is to carry the instruction of the college to those who cannot come to it for study. Whenever necessary and possible, visits will be made to any part of the state to examine farms, orchards, and gardens; to identify injurious insects or plant diseases, or give instruction in regard to methods of treatment; or to examine soils with a view to suggesting remedies for lack of fertility. General plans for laying out farms and for carrying out the details of any farm operation will be given the fullest consideration. The college is available for consultation at any time in regard to any problem of the farm, garden, or orchard. The fullest correspondence is invited, and conscientious consideration will be given to every letter received. In conjunction with this phase of the work, popular bulletins are issued from time to time, which endeavor to present the gist of agricultural information on various topics without the uninteresting detail of the usual experiment-station bulletin.

Whenever possible, arrangements will be made for demonstrations or lectures by members of the college faculty and experiment-station staff when called for by any agricultural meeting or neighborhood gathering. A number of lectures on various subjects has been prepared, which can be secured on short notice by any gathering or organization within the state. These lectures are free, the only charge being the traveling expenses of the speaker. A complete list of the lectures, together with such other information in regard to them as may be of interest, has been prepared and may be obtained by sending a postal-card request to the department.

An important part of this extension work is to be the encouragement of home study and the conducting of correspondence courses. For the present, time and funds will not permit the carrying out of this plan, but advice will be given to any person wishing to take up home study, regarding courses of reading, books, and other literature which may be necessary in connection with such work.

In an effort to interest the boys of the state in agriculture, a corn growing contest for boys was started two years ago and closed with a state exhibit of corn in the autumn. This contest work has now been enlarged to include adult classes in corn growing, and girls' classes in cooking, canning and sewing, with an exhibition at the close of each season.

As a further aid to the development of a better agriculture, the extension department maintains the following lines of work for children:

1. **NATURE STUDY.**—This is encouraged through the publication of a little leaflet called the Nature Guard, and the organization of boys and girls in the schools and elsewhere into bands called Nature Guard bands, the purpose of which is to awaken in its members a livelier interest in the things of outdoor life. It endeavors to stimulate the powers of observation and to lay the foundation for a simple, rational education which shall give the individual a love for nature and a sympathy with his environment and furnish him with a means of making life more useful and more enjoyable, whether lived in the country or in the city.

2. **CHILDREN'S GARDENS.**—The extension department endeavors to aid schools and other organizations in carrying on children's gardens. An instructor is employed who gives a large part of his time to this work and who gives the children direct personal instruction in methods of preparing the ground, planting, cultivating, and harvesting garden crops. Home gardens are also encouraged, and advice given through correspondence and by circulars about the best methods of cultivating garden crops.

3. **AGRICULTURE IN THE PUBLIC SCHOOLS.**—Assistance is given as far as possible to school authorities who wish to introduce agriculture into the schools. This has taken the form of suggestions as to books to be used, and in regard to outlines for the work to be done. Whenever possible, representatives of the college are sent to consult with the superintendents and teachers, and to give lectures on topics connected with the courses given.



Further notes in regard to this work are given in leaflets and circulars issued by the extension department, and correspondence from anyone who may be interested therein is invited.

### Engineering Extension Work.

In the Engineering Department as well as in the other branches of the College, the endeavor is to be of the greatest possible service to the people of the state, not only in the matter of providing formal instruction to students coming to the college, but also in giving help and information to those outside the college enrollment who are desirous of extending their technical knowledge, and to whom, for one reason or another, a regular college course is impossible.

To this end there has been offered in the past a short course of two years' duration in which instruction has been given in the elements of engineering. Experience, however, has shown that those most eager to avail themselves of this kind of instruction, and those who would be most helped by it, were unable to leave their regular duties to attend classes at the college.

As a consequence, the short course work in engineering at the college has been discontinued, and in its place has been inaugurated the plan of Extension Work in Engineering. Instead of taking the man away from his regular duties to bring him to the work, the present plan is to carry the work to the man.

This extension work is carried out in two chief ways,—by means of separate lectures on specific topics, and by means of progressive study in organized classes. The subjects presented are all of a technical character and are adapted to the particular needs and capabilities of the classes.

The present requirements for such class work are that a suitable place for meeting be provided, and that the attendance be regular. This regularity of attendance is a matter of the greatest importance, since without it little or no progress is possible.

Classes are now being conducted in various places in The Use of the Slide Rule, Mechanism and Shop Calculations, Power Plant Computations, etc. Instruction in these and any other desired branch of engineering may be had by citizens of the state by complying with the requirements mentioned, the number of such courses being limited only by the available time of the members of the department. Also lecturers will be provided to present various phases of engineering before technical organizations and engineering societies.

## The College as an Educational Agency.

In its third form of activity, the purpose and work of the Rhode Island State College is to give college training and culture to young men and young women, not in spite of, but through and with vocational studies. Its courses are intended, first of all, to make the student a self-supporting unit in society, a positive force for social advancement, able and willing not only to maintain himself, but also to carry something of the common social burdens that always weigh upon the thoroughly efficient worker.

### I. THE FOUR-YEAR COURSES.

To this end certain college courses, intended to fit men and women for efficiency and leadership in well-defined life-activities, have been prepared. These courses are all founded upon training in mathematics, pure and applied; the English language as a means of intercommunication; and the sciences that deal with matter, force, and life as applied more directly to agriculture, the mechanic arts, and home economics. In the pursuit of these vocational studies, the effort is to accumulate an array of knowledge that, in the activities of industrial life, must be always practically serviceable, and, at the same time, to gain a disciplinary training both of brain and of muscle and nerve that make for practical effectiveness. These courses, moreover, recognizing that a college course should include not only intellectual training and the knowledge and skill requisite for bread-winning, but also preparation for citizenship, for moral and social life, have intertwined with the vocational work and study previously mentioned, the subjects that most directly make for culture and morality—history, economics, literature, languages, ethics, psychology, and sociology. These are ranked as of equal importance with the bread-winning studies.

The college courses just discussed are four years in length, and base themselves directly on the work of the four years of the high schools. They thus become an integral part of the school system of the state. Young men and young women, citizens of the state and having requisite high-school training, are admitted to these courses without charge for tuition.

The four-year courses thus offered are the agricultural course, the engineering course, the teachers' course in applied science, and the course in home economics.

## The Agricultural Course.

The agricultural course is intended to give thorough preparation for taking charge of and operating a piece of landed property. Its work is centered around instruction and practice in horticulture, general farming, and animal husbandry (more especially as applied to dairying and the poultry industry). The course consists of practical work combined with thorough study of the sciences bearing directly on such work, viz.: botany, chemistry, geology, zoölogy, anatomy, physics, and entomology. In addition, it embraces the culture and mental discipline arising from the study of mathematics, English composition and rhetoric, history, drawing, modern languages, economics, and English literature. The course is planned to give the student a full and rounded development as worker, as citizen, and as man.

All agricultural students will follow the same work in the first year; in the Sophomore year, one elective is offered, in the second half of the Junior year in addition to the required work for all students in the course, two optional lines of work are offered, one of which must be selected by the student and followed until graduation. The two lines offered are horticulture, and animal husbandry. No option and no subject will be given for which a number of students sufficient to warrant giving it has not applied. The tabulated course follows:

### Freshman Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I) . .	3	Rhetoric and Composition (English I) . .	3
German or French (I or II) . . . . .	3	German or French (I or II) . . . . .	3
Algebra (Math. I), Trigonometry (Math. II) . . . . .	5	General Chemistry and Qualitative Analysis (Chem. II) . . . . .	3 [1½]
General Chemistry (Chem. I) . . . . .	2 [1½]	General Botany (Botany I) . . . . .	1 [2]
General Botany (Botany I) . . . . .	1 [2]	Stock Judging (An. Husb. I) . . . . .	[2]
Propagation of Plants, (Hort. I) . . . . .	1 [1]	Poultry (An. Husb. XII) . . . . .	[1]
Drawing, Pencil (Fr. Dr. II) . . . . .	[1]	Spraying and Pruning (Hort. IV) . . . . .	1 [1]
How to Study (Psy. and Ed. VIII) . . . . .	½	Vegetable Gardening (Hort. II) . . . . .	2
Drill (Mil. Sci. and T. I) . . . . .	[1]	Drill (Mil. Sci. and T. I) . . . . .	[1]
Theory (Mil. Sci. and T. II) . . . . .	½	Theory (Mil. Sci. and T. II) . . . . .	½

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II) . . . . .	1	Argumentation (English III) . . . . .	2
Interpretive Reading (English VIII) . . . . .	1	German or French (II) . . . . .	3
German or French (II) . . . . .	3	Agricultural Chemistry (Chem. XIV) . . . . .	3 [1]
Organic Chemistry (Chem. IV) . . . . .	3 [1]	Descriptive Physics (Physics I) . . . . .	5
Botany of Crops and Weeds (Bot. II) . . . . .	1 [2]	Physiology (Zool. III) . . . . .	3 [1]
General Zoölogy (Zool. I) . . . . .	2 [2]	Geology (Geology I) . . . . .	2
Surveying (Civ. Eng. I) . . . . .	1 [2]	Drill (Mil. Sci. and T. I) . . . . .	[1]
Drill (Mil. Sci. and T. I) . . . . .	[1]	Theory for Commissioned Officers (Mil. Sci. and T. III) . . . . .	½
Theory for Commissioned Officers (Mil. Sci. and T. III) . . . . .	½		
Forage Plants (Agron. II) . . . . .	2		
or			
Arboriculture (Hort. XIV) . . . . .	1 [1]		

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern Essays (English IV).....	4	Debating (English IX).....	1
Debating (English IX).....	1	Industrial History (History I).....	4
Feeding (An. Husb. VI).....	3	Farm Crops (Agron. IV).....	3 [1]
Soils and Fertilizers (Agron. III).....	4 [1½]	Farm Management (Agron. VII).....	2
Landscape Gardening (Hort. XVI).....	1 [2]	Drill (Mil. Sci. and T. I).....	[1]
Fruit Culture (Hort. III).....	2	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½
Drill (Mil. Sci. and T. I).....	[1]	Options: A, B.	
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	All of the subjects in one of the following groups must be chosen:	
		A. <i>Horticulture.</i>	
		Forestry (Botany IV).....	2
		Economic Entomology (Zool. IV).....	3 [1]
		Elective.....	3
		B. <i>Animal Husbandry.</i>	
		Dairy Practice (An. Husb. VII).....	1 [2]
		Farm Machinery (Agron. VI).....	2 [1]
		Elective.....	3

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I).....	2 ½	Civil Government (History II).....	1 ½
Civil Government (History II).....	1 ½	Shakspeare (English V).....	2 ½
Oratorical Writing and Extemporaneous Speaking (English X).....	1	Oratorical Writing and Extemporaneous Speaking (English X).....	1
Agricultural Experimentation (Agron. X).....	3	Vet. Medicine (An. Husb. X).....	3
Plant Breeding (Agron. XI).....	3	Drill (Mil. Sci. and T. I).....	[1]
General Bacteriology (Bact. I).....	3	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½
Drill (Mil. Sci. and T. I).....	[1]	Options: A, B.	
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	All of the subjects in one of the following groups must be chosen:	
Elective.....	8	A. <i>Horticulture.</i>	
		Elective.....	14
		B. <i>Animal Husbandry.</i>	
		Breeding (An. Husb. IV).....	3
		Elective.....	

## The Engineering Course.

The engineering course has the same duration and the same general plan as that usually offered in the standard technical colleges. Students will follow the course as laid down until the second half of the Sophomore year, at which time they must elect one of the four optional lines offered, viz: mechanical, electrical, civil, and chemical engineering. Any line of work for which the number of applicants is insufficient to warrant giving it, the college reserves the right to withdraw.

The course is arranged to prepare young men for skilled and efficient work in the great manufacturing and commercial industries of the state; in the development of electricity as a motive force and in its thousand-fold other applications to the arts and to the life of society; in the activities of the new road-building era upon which we are entering; and in the applications of chemistry as now found



in the great industrial establishments. At the same time, in this as in all other courses, it is not forgotten that the man is not a mere lever in his own machinery, and the effort after breadth and completeness of life is steadily maintained. The tabulated course follows:

### Freshman Year.

For the first year the course is the same for all students of engineering.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I) ..	3	Rhetoric and Composition (English I) ..	3
German or French (I or II) .....	3	German or French (I or II) .....	3
Algebra (Math. I), Trigonometry (Math. II) .....	5	Analytics (Math. VIIa) .....	5
General Chemistry (Chem. I) .....	2 [1½]	General Chemistry and Qualitative Analysis (Chem. II) .....	3 [1½]
Mechanical Drawing (Mech. Eng. I) ..	[3]	Mechanical Drawing (Mech. Eng. I) ..	[2]
Forge and Foundry (Mech. Eng. II) ..	[3]	Pattern Making (Mech. Eng. III) .....	[3]
How to Study (Psy. and Ed. VIII) .....	½	Drill (Mil. Sci. and T. I) .....	[1]
Drill (Mil. Sci. and T. I) .....	[1]	Theory (Mil. Sci. and T. II) .....	½
Theory (Mil. Sci. and T. II) .....	½		

### MECHANICAL ENGINEERING.

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II) .....	1	Argumentation (English III) .....	2
Interpretive Reading (English VIII) ..	1	General Physics (Physics II) .....	4
Qualitative Analysis (Chem. III) .....	[3]	Laboratory (Physics III) .....	[1½]
General Physics (Physics II) .....	4	Calculus (Math. XI) .....	5
Laboratory (Physics III) .....	[1½]	Graphic Statics (Mech. Eng. IV) .....	2
Calculus (Math. X) .....	5	Mechanical Drawing (Mech. Eng. VI) ..	[3]
Descriptive Geometry (Mech. Eng. V) ..	1 [2]	Mechanism (Mech. Eng. XII) .....	3
Surveying (Civ. Eng. I) .....	1 [2]	Drill (Mil. Sci. and T. I) .....	[1]
Drill (Mil. Sci. and T. I) .....	[1]	Theory for Commissioned Officers (Mil. Sci. and T. III) .....	½
Theory for Commissioned Officers (Mil. Sci. and T. III) .....	½		

### Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern Essays (English IV) .....	4	Debating (English IX) .....	1
Debating (English IX) .....	1	Industrial History (History I) .....	4
Heat Engineering (Mech. Eng. IX) .....	3	Heat Engineering (Mech. Eng. IX) .....	3
Applied Mechanics (Mech. Eng. X) .....	5	Applied Mechanics (Mech. Eng. X), Hydraulics (Mech. Eng. XI) .....	5
Machine Drafting (Mech. Eng. VIII) ..	[3]	Valve Gears (Mech. Eng. XIII) .....	3
Machine Shop (Mech. Eng. XIV) .....	[3]	Machine Shop (Mech. Eng. XIV) .....	[3]
Experimental Engineering a (Mech. Eng. XV) .....	[2]	Experimental Engineering b (Mech. Eng. XVI) .....	[2]
Drill (Mil. Sci. and T. I) .....	[1]	Drill (Mil. Sci. and T. I) .....	[1]
Theory for Commissioned Officers (Mil. Sci. and T. III) .....	½	Theory for Commissioned Officers (Mil. Sci. and T. III) .....	½

### Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II) .....	4	Civil Government (History II), Shakspeare (English V) .....	4
Oratorical Writing and Extemporaneous Speaking (English X) .....	1	Oratorical Writing and Extemporaneous Speaking (English X) .....	1
Experimental Engineering c (Mech. Eng. XVII) .....	2 [2]	Experimental Engineering d (Mech. Eng. XVIII) .....	[2]
Machine Design (Mech. Eng. XX) .....	[3]		



FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Power Plants and Design (Mech. Eng. XXI).....	2 [1]	Machine Design (Mech. Eng. XX).....	[3]
Assigned Work (Mech. Eng. XXII)....	3	Heating and Ventilation (Mech. Eng. XIX).....	1
Theory of Direct Currents (El. Eng. I)...	3	Assigned Work (Mech. Eng. XXII)....	3
Drill (Mil. Sci. and T. I).....	[1]	Theory of Alternating Currents (El. Eng. IV).....	2
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Dynamics of Machines (Mech. Eng. XXIII).....	2
		Works Management (Mech. Eng. XXIV).....	1
		Direct Current Laboratory (El. Eng. II).....	[3]
		Drill (Mil. Sci. and T. I).....	[1]
		Theory for Commissioned Officers (Mil. Sci. and T. III).....	½

## ELECTRICAL ENGINEERING.

## Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	2
Interpretive Reading (English VIII)...	1	General Physics (Physics II).....	4
Qualitative Analysis (Chem. III).....	[3]	Laboratory (Physics III).....	[1½]
General Physics (Physics II).....	4	Calculus (Math. XI).....	5
Laboratory (Physics III).....	[1½]	Graphic Statics (Mech. Eng. IV).....	2
Calculus (Math. X).....	5	Mechanical Drawing (Mech. Eng. VI)...	[3]
Descriptive Geometry (Mech. Eng. V)...	1 [2]	Machine Shop (Mech. Eng. VII).....	[3]
Surveying (Civ. Eng. I).....	1 [2]	Electrical Measurements (El. Eng. III)...	½
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern Essays (English IV).....	4	Debating (English IX).....	1
Debating (English IX).....	1	Industrial History (History I).....	4
Theory of Direct Currents (El. Eng. I)...	3	Direct Current Laboratory (El. Eng. II)...	[3]
Electrical Measurements (Physics IV)...	1	Theory of Alternating Currents (El. Eng. IV).....	2
Electrical Measurements, Laboratory (Physics V).....	[1½]	Heat Engineering (Mech. Eng. IX)....	3
Heat Engineering (Mech. Eng. IX)....	3	Applied Mechanics (Mech. Eng. X), 1½,	5
Applied Mechanics (Mech. Eng. X)....	5	Hydraulics (Mech. Eng. XI), 3¼.....	5
Experimental Engineering a (Mech. Eng. XV).....	[2]	Experimental Engineering b (Mech. Eng. XVI).....	[2]
Principles of Illumination (Physics VI)...	1 [1½]	Drill (Mil. Sci. and T. I).....	[1]
Drill (Mil. Sci. and T. I).....	[1]	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½		

## Senior Year.

FIRST YEAR.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), 2½,		Civil Government (History II), 1½,	
Civil Government (History II), 1½...	4	Shakspeare (English V), 2½.....	4
Oratorical Writing and Extemporaneous Speaking (English X).....	1	Oratorical Writing and Extemporaneous Speaking (English X).....	1
Theory of Alternating Currents (El. Eng. V).....	3	Theory of Alternating Currents (El. Eng. V).....	3
Alternating-Current Laboratory (El. Eng. VI).....	[3]	Alternating Current Laboratory (El. Eng. VI).....	[3]
Telephone Engineering (El. Eng. VIII)...	1	Design of Electrical Machinery (El. Eng. VII).....	[3]
Assigned Work (El. Eng. XII).....	[3]	Electric-Railway Engineering (El. Eng. XI).....	2
Experimental Engineering c (Mech. Eng. XVII).....	2 [2]	Assigned Work (El. Eng. XII).....	[3]
Transmission of Energy (El. Eng. X)...	2	Drill (Mil. Sci. and T. I).....	[1]
Power Plants (Mech. Eng. XXI).....	2	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½
Drill (Mil. Sci. and T. I).....	[1]		
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½		

## CIVIL ENGINEERING.

## Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	2
Interpretive Reading (Eng. VIII).....	1	General Physics (Physics II).....	4
Qualitative Analysis (Chem. III).....	[3]	Laboratory (Physics III).....	[1½]
General Physics (Physics II).....	4	Calculus completed (Math. XI).....	5
Laboratory (Physics III).....	[1½]	Graphic Statics (Mech. Eng. IV).....	2
Calculus (Math. X).....	5	Mechanical Drawing (Mech. Eng. VI)...	[3]
Descriptive Geometry (Mech. Eng. V)...	1 [2]	Machine Shop (Mech. Eng. VII).....	[1½]
Surveying (Civ. Eng. I).....	1 [2]	Topographic Surveying (Civ. Eng. II)...	1 [2]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern Essays (English IV).....	4	Debating (English IX).....	1
Debating (English IX).....	1	Industrial History (History I).....	4
Graphic Statics (Civ. Eng. IV).....	2	Railroad Engineering (Civ. Eng. III b)...	3
Elements of Thermo-dynamics (Mech. Eng. XXV).....	3	Applied Mechanics (Mech. Eng. X), 1½,	
Applied Mechanics (Mech. Eng. X)...	5	Hydraulics (Mech. Eng. XI), 3½.....	5
Railroad Engineering (Civ. Eng. III a)...	5	Experimental Engineering b (Mech. Eng. XVI).....	[2]
Drill (Mil. Sci. and T. I).....	[1]	Geology (I).....	2
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Roads and Pavements (Civ. Eng. V)...	3 [1]
		Drill (Mil. Sci. and T. I).....	[1]
		Theory for Commissioned Officers (Mil. Sci. and T. III).....	½

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), 2½,		Civil Government (History II), 1½,	
Civil Government (History II) 1½...	4	Shakspere (English V), 2½.....	4
Oratorical Writing and Extemporaneous Speaking (English X).....	1	Oratorical Writing and Extemporaneous Speaking (English X).....	1
Experimental Engineering c (Mech. Eng. XVII).....	2 [2]	Experimental Engineering d (Mech. Eng. XVIII).....	[2]
Bridge Details (Civ. Eng. VI).....	[2]	Bridge Design (Civ. Eng. VIII).....	[3]
Bridge Analysis (Civ. Eng. VII).....	2	Reinforced Concrete (Civ. Eng. X)...	2
Masonry Construction (Civ. Eng. IX)...	2 [1]	Water Supply (Civ. Eng. XII).....	3
Sewerage (Civ. Eng. XI).....	2	Tunneling (Civ. Eng. XIII).....	1
Assigned Work (Civ. Eng. XV).....	3	Contracts and Specifications (Civ. Eng. XIV).....	2
Drill (Mil. Sci. and T. I).....	[1]	Assigned Work (Civ. Eng. XV).....	3
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Drill (Mil. Sci. and T. I).....	[1]
		Theory for Commissioned Officers (Mil. Sci. and T. III).....	½

## CHEMICAL ENGINEERING.

## Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	2
Interpretive Reading (English VIII).....	1	German (Ger. II).....	3
German (Ger. II).....	3	General Physics (Physics II).....	4
Organic Chemistry (Chem. IV).....	3 [1]	Laboratory (Physics III).....	[1½]
General Physics (Physics II).....	4	Calculus (Math. XI).....	5
Laboratory (Physics III).....	[1½]	Graphic Statics (Mech. Eng. IV).....	2
Calculus (Math. X).....	5	Qualitative Analysis (Chem. IIIa).....	1 [3]
Descriptive Geometry (Mech. Eng. V)...	1 [2]	Mechanism (Mech. Eng. XII).....	3
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½

### Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern Essays (English IV).....	4	Debating (English IX).....	1
Debating (English IX).....	1	Industrial History (History I).....	4
Heat Engineering (Mech. Eng. IX)....	3	Heat Engineering (Mech. Eng. IX)....	1½
Applied Mechanics (Mech. Eng. X)....	5	Organic Chemistry (Chem. VI).....	[3]
Quantitative Analysis (Chem. VII)....	[3]	Quantitative Analysis (Chem. VIII)...	[4½]
Organic Chemistry (Chem. V).....	3 [1]	Determinative Mineralogy (Chem. XI)...	[1½]
Reports and Discussions (Chem. XXI)...	1	Industrial Chemistry (Chem. XVI)....	4
Drill (Mil. Sci. and T. I).....	[1]	Reports and Discussions (Chem. XXI)...	1
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Drill (Mil. Sci. and T. I).....	[1]
		Theory for Commissioned Officers (Mil. Sci. and T. III).....	½

### Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), 2½,		Civil Government (History II), 1½,	
Civil Government (History II), 1½...	4	Shakspeare (English V), 2½.....	4
Oratorical Writing and Extemporaneous Speaking (English X).....	1	Oratorical Writing and Extemporaneous Speaking (English X).....	1
Quantitative Analysis (Chem. VIII)...	[3]	Metallurgy (Chem. XIII).....	2
Experimental Engineering a (Mech. Eng. XV).....	[2]	Industrial Chemistry (Chem. XVII)...	[3]
Theory of Direct Currents (El. Eng. I)...	3	Assaying (Chem. XVIII).....	[2]
Organic Chemistry (Chem. V).....	3 [1]	Reports and Discussions (Chem. XXI)...	1
Reports and Discussions (Chem. XXI)...	1	Assigned Work (Chem. XX).....	3
Assigned Work (Chem. XX).....	3	Electro-Chemistry (Chem. XXII).....	3
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½

### Teachers' Courses in Applied Science.

This course is intended to prepare persons to teach in industrial schools those branches of applied science that pertain especially to agriculture and the mechanic arts. In such schools it has been found of especial importance that the teachers be trained in an environment of current thought, sympathetic with the industrial applications of science and intelligently appreciative of the methods and problems of such work. In response, therefore, to the need, and in accordance with an expressed purpose of the latest fund from the United States Government, we have constructed this course. The effort has been to make the course effective for its purpose, while at the same time retaining for it that breadth and that cultural influence that are necessary to fit the whole man or woman for social life and are especially important in persons who, as teachers, will exercise large personal influence over immature youth.

The general plan of the course is the same as that of the other two courses just described. It offers to the student, at the beginning of the Junior year, three options, one of which he must select in conjunction with certain studies required of all. The tabulated course follows:

## Freshman Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I)...	3	Rhetoric and Composition (English I)...	3
German or French (I or II).....	3	German or French (I or II).....	3
Algebra (Math. I), 2½, Trigonometry (Math II), 2½.....	5	General Chemistry and Qualitative Analysis (Chem. II).....	3 [1½]
General Chemistry (Chem. I).....	2 [1½]	General Botany (Botany I).....	1 [2]
General Botany (Botany I).....	1 [2]	Analysis (Math. VIII b).....	5
Propagation of Plants (Hort I).....	1 [1]	Drawing, Pencil (Fr. Dr. II).....	[1]
Drawing, Pencil (Fr. Dr. II).....	[1]	{ Drill (Mil. Sci. and T. I).....	[1]
How to Study (Psy. and Ed. VIII).....	½	{ Theory (Mil. Sci. and T. II).....	½
{ Drill (Mil. Sci. and T. I).....	[1]	or	
{ Theory (Mil. Sci. and T. II).....	½	{ Euthenics (Home Econ. III).....	1
or		{ Physical Training.....	[1]
{ Hygiene (Home Econ. III a).....	1		
{ Physical Training.....	[1]		

## Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	2
Interpretive Reading (English VIII)...	1	German or French (II).....	3
German or French (II).....	3	Qualitative Analysis (Chem. III a)...	1 [3]
Organic Chemistry (Chem. IV).....	3 [1]	Physiology (Zoöl. III).....	3 [1]
Botany of Crops and Weeds (Bot. II)...	1 [2]	Geology (I).....	2
General Zoölogy (Zoöl. I).....	2 [2]	General Physics (Physics II).....	4
General Physics (Physics II).....	4	Laboratory (Physics III).....	[1½]
Laboratory (Physics III).....	[1½]	Drill (Mil. Sci. and T. I), or Physical Training.....	[1]
Drill (Mil. Sci. and T. I) or Physical Training.....	[1]	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½		

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern Essays (English IV).....	4	Debating (English IX).....	1
Debating (English IX).....	1	Industrial History (History I).....	4
General Psychology (Psy. and Ed. IV)...	3	Drill (Mil. Sci. and T. I) or Physical Training.....	[1]
Drill (Mil. Sci. and T. I) or Physical Training.....	[1]	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Elective.....	5
Elective.....	5	Options: A, B, C.	
Options: A, B, C.		All of the subjects in one of the follow- ing groups must be chosen:	
All of the subjects in one of the follow- ing groups must be chosen:		A. <i>Agriculture.</i>	
A. <i>Agriculture.</i>		Farm Crops (Agron. IV).....	3 [1]
Soils (Agron. III).....	4 [1½]	Economic Entomology (Zoöl. IV).....	3 [1]
Fruit Culture (Hort. III).....	2	Forestry (Botany IV) or Spraying and Pruning (Hort. IV).....	1 [1]
B. <i>Biology.</i>		B. <i>Biology.</i>	
Vertebrate Anatomy (Zoöl. VII).....	[3]	Histology and Embryology (Zoöl. VIII)...	2 [3]
Plant Histology (Botany V).....	1 [4]	Plant Pathology (Botany VI).....	1 [4]
C. <i>Chemistry.</i>		C. <i>Chemistry.</i>	
Quantitative Analysis (Chem. VII)....	[3]	Organic Chemistry (Chem. VI).....	[3]
Physical Chemistry (Chem. XII).....	3 [1]	Quantitative Analysis (Chem. VIII)...	[4½]
Reports and Discussions (Chem. XXI)...	1	Mineralogy (Chem. XI).....	[1½]
		Reports and Discussions (Chem. XXI)...	1



## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), 2½,		Civil Government (History II), 1½,	
Civil Government (History II), 1½...	4	Shakspeare (English V), 2½.....	4
Oratorical Writing and Extemporaneous		Oratorical Writing and Extemporaneous	
Speaking (English X).....	1	Speaking (English X).....	1
History of Education (Psy. and Ed. I)...	3	Secondary Education (Psy. and Ed. III).	3
Principles of Education (Psy. and Ed. II)	1	Assigned Work.....	3
Assigned Work.....	3	Drill (Mil. Sci. and T. I) or Physical	
Drill (Mil. Sci. and T. I) or Physical		Training.....	[1]
Training.....	[1]	Theory for Commissioned Officers (Mil.	
Theory for Commissioned Officers (Mil.		Sci. and T. III).....	½
Sci. and T. III).....	½	Options: A, B, C.	
Options: A, B, C.		All of the subjects in one of the follow-	
All of the subjects in one of the follow-		ing groups must be chosen:	
ing groups must be chosen:		A. <i>Agriculture.</i>	
A. <i>Agriculture.</i>		Vegetable Gardening (Hort. II).....	2
Poultry (An. Husb. XIV).....	[2]	Farm Buildings (An. Husb. XI).....	[2]
Landscape Gardening (Hort. XVI)....	1 [2]	Breeding (An. Husb. IV).....	3
Feeding (An. Husb. VI).....	3	B. <i>Biology.</i>	
B. <i>Biology.</i>		{ Forestry (Botany IV).....	2
Plant Breeding (Agron. XI).....	3	or	
Trees and Shrubs (Botany III).....	[1]	{ Spraying and Pruning (Hort. IV)....	1 [1]
Entomology (Zool. V).....	1 [2]	General Zoology (Zool. II).....	1 [2]
C. <i>Chemistry.</i>		Entomology (Zool. V).....	2 [2]
{ Physical Chemistry (Chem. XII)....	3 [1]	Trees and Shrubs (Botany III).....	[1]
or		C. <i>Chemistry.</i>	
{ Organic Chemistry (Chem. V).....	3 [1]	Electro-Chemistry (Chem. XXII)....	3
Reports and Discussions (Chem. XXI).	1	Industrial Chemistry (Chem. XVI)....	4
		Industrial Chemistry (Chem. XVII)....	[3]
		Reports and Discussions (Chem. XXI).	1

## The Course in Home Economics.

The object of the home economics course is to fit young women for homemaking and to provide adequate training for teachers of the various household arts. Nowhere is the application of modern science to everyday life more important than in the home. In no other lifework do women find greater need of scientific knowledge and technical skill than in the intelligent and economic administration of household affairs.

The course includes instruction in the planning, sanitation, decoration, and care of the house and its administration on the economic side; the preparation of food from the scientific and economic points of view; the study of nutrition; the discussion of problems of personal and public hygiene and instruction in the care of infants and young children. During one year instruction is given in hand sewing, machine practice, and in drafting, cutting, and making of plain garments. Although the main work is scientific and technical, the importance of artistic and literary training for home life has not been neglected. It is recognized that all the knowledge of right living is needed to assist the student to a broader conception of citizenship as well as in performing the manifold duties of daily life.



Attention has also been given, in planning the course, to the need of students desiring to enter special fields of domestic activity along institutional and educational lines of work.

The entrance requirements are the same as for the other college courses. Thirty-eight of the credits required for graduation, are in the home economics department. Students are expected to take the course as outlined below, with choice of electives; but when entered in other courses in the college they may elect certain work in the home economics department, under direction of the head of the department. The tabulated course follows:

### Freshman Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I)...	3	Rhetoric and Composition (English I)...	3
German or French (I or II).....	3	German or French (I or II).....	3
Algebra (Math. I), 2½; Trigonometry Math. II), 2½.....	5	General Chemistry and Qualitative An- alysis (Chem. II).....	3 [1½]
General Chemistry (Chem. I).....	2 [1½]	General Botany (Botany I).....	1 [2]
General Botany (Botany I).....	1 [2]	Drawing, Pencil (Fr. Dr. II).....	[1]
Drawing, Pencil (Fr. Dr. II).....	[1]	Domestic Art (H. Ec. I).....	[2]
Domestic Art (H. Ec. I).....	[1]	Elementary Cookery (H. Ec. II).....	1 [1]
Hygiene (H. Ec. IIIa).....	1	Euthenics (H. Ec. IIIb).....	1
How to Study (Psy. and Ed. VIII).....	½	Physical Training.....	[1]
Physical Training.....	[1]		

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	2
Interpretive Reading (English VIII)...	1	German or French (II).....	3
German or French (II).....	3	Qualitative Analysis (Chem. IIIa)....	1 [3]
Organic Chemistry (Chem. IV).....	3 [1]	Physiology (Zoöl. III).....	3 [1]
General Zoölogy (Zoöl. I).....	2 [2]	Descriptive Physics (Physics I).....	5
Color Problems (Fr. Dr. IV).....	[1]	Foods (H. Ec. IV).....	2 [1½]
Foods (H. Ec. IV).....	3 [1½]	Physical Training.....	[1]
Household Management (H. Ec. V)....	2		
Physical Training.....	[1]		

### Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern Essays (English IV).....	4	Debating (English IX).....	1
Debating (English IX).....	1	Industrial History (History I).....	4
General Psychology (Psy. and Ed. IV)...	3	Physiological Chemistry (Chem. XIX)...	4
Vertebrate Anatomy (Zoöl. VII).....	[3]	Histology and Embryology (Zoöl. VIII)...	2 [3]
Mechanical Drawing (Mech. Eng. I)...	[1½]	History of Art (Fr. Dr. III).....	2
Human Nutrition (H. Ec. VI).....	3	Freehand Drawing (VII).....	[1]
Home Decoration (H. Ec. VII).....	2	Dietetics (H. Ec. VIII).....	1 [1]
Physical Training.....	[1]	Sanitation (H. Ec. IX).....	2
Elective.....	4	Physical Training.....	[1]

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I).....	2½	Civil Government (History II).....	1½
Civil Government (History II).....	1½	Shakspeare (English V).....	2½
Oratorical Writing and Extemporaneous Speaking (English X).....	1	Oratorical Writing and Extemporaneous Speaking (English X).....	1
Food Analysis (Chem. X).....	[4]	Secondary Education (Psy. and Ed. III).....	3
History of Education (Psy. and Ed. I).....	3	Assigned Work (H. Ec. XIV).....	3 [2]
Psychological Principles of Education (Psy. and Ed. II).....	1	Home Nursing (H. Ec. XII).....	2
History of Art (Fr. Dr. III).....	2	Therapeutic Cookery (H. Ec. XIII).....	1 [1]
Food Preservation (H. Ec. X).....	[1]	Physical Training.....	[1]
Hygiene and Care of Children (H. Ec. XI).....	2	Elective.....	3
Physical Training.....	[1]		
Elective.....	3		

## II. SHORT COURSES IN AGRICULTURE AND IN DOMESTIC SCIENCE.

To meet the needs of those who find it inexpedient to undertake a four years' college course, but who, nevertheless, desire to increase their efficiency on the farm or in the home, the college offers what are known as short courses in agriculture and in domestic science.

At present each of these courses is of two years' duration. The only requirements for admission are that candidates shall be at least eighteen years of age and shall have completed the common school course. The courses are in no case supposed to serve as a substitute for the regular work of the college, in character or scope of the subject-matter presented, and do not lead, directly or indirectly, to a degree, a certificate only being granted. Neither are they to be considered as preparatory to the college work. Their particular function is to give, in the shortest, most direct way possible, certain definite, specific, and perhaps uncorrelated information which will be of immediate value on the farm or in the home.

In studies of common interest, like mathematics and English, all short-course students work together. All other instruction is of a special nature and is given in the respective departments of agriculture and home economics. In English, the object is to develop the power of clear analysis and expression by continued drill in grammar and composition, based upon readings in industrial or political history.

The special work in agriculture treats in an elementary way of such subjects as plant life, soils and fertilizers, vegetable gardening, stock judging, crops, dairy practice, poultry, fruit culture, etc. The course in domestic science gives practical instruction in the care of

the house, foods, plant life, physical training, home management, etc.

Short-course work is of comparatively recent introduction at this institution, and consequently is still in the process of development. It is hoped to increase the effectiveness of each of the above phases of the work at as early a date as possible, by more completely separating them from one another and from other lines of instruction; also, particularly in agriculture, by a re-adjustment of the time in such a way as to accommodate a greater number of men desiring to take the course. For example, it is proposed to give the agricultural matter in three winter terms of twenty-four weeks each, rather than in two years of thirty-six weeks each, the idea being that the shorter period would enable a large number of practical farmers to attend.

## Agriculture.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (A).....	5	Elementary English (A).....	5
Plant Life (Botany A).....	1 [2]	Plant Life (Botany A).....	1 [2]
Elementary Zoology (A).....	3 [1½]	Soils, Fertilizers (Agron. A).....	4 [1]
Breeds (An. Husb. A).....	2	Plant and Animal (Chem. A).....	3 [1]
Stock Judging (An. Husb. B).....	[2]	Nursery Practice (Hort. C).....	1 [1]
Plant and Animal (Chem. A).....	3 [1]	Benchwork (Woodwork I).....	[1½]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## Second Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Bookkeeping (Math. G).....	4	Vegetable Gardening (Hort. A).....	2 [1]
Crops and Rotation (Agron. B).....	3 [1]	Farm Management (Agron. C).....	4
Dairy Practice (An. Husb. C).....	1 [2]	Breeding (An. Husb. E).....	2 [1]
Stock Feeding (An. Husb. D).....	3	Poultry (An. Husb. F).....	1 [1]
Fruit Culture (Hort. B).....	3	Farm Buildings (Woodwork H).....	[1]
Poultry (An. Husb. F).....	1 [1]	Farm Machinery (Agron. D).....	1 [2]
Care of Farm Animals (An. Husb. G).....	2	Spraying and Pruning (Hort. E).....	1 [1]
Drill (Mil. Sci. and T. I).....	[1]	Home Grounds (Hort F).....	2
		Drill (Mil. Sci. and T. I).....	[1]

## Domestic Science.

### First Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (A).....	5	Elementary English (A).....	5
Bookkeeping (Math. G).....	5	Plant Life (Botany A).....	1 [2]
Plant Life (Botany A).....	1 [2]	Floriculture (Hort. D).....	[2]
Elementary Zoology (A).....	3 [1½]	Foods (Dom. Sci. C).....	3 [1½]
Household Technique (Dom. Sci. A).....	1	Woodcarving.....	[1½]
Foods (Dom. Sci., Ca).....	[1]	Freehand Drawing.....	[3]
Sewing (Dom. Sci. B).....	[1]	Physical Training.....	[1]
Physical Training.....	[1]		

## Second Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (B).....	3	Elementary English (B).....	3
Plant and Animal (Chem. A).....	3 [1]	Plant and Animal (Chem. A).....	3 [1]
English History (History A).....	3	English History (History A).....	3
Dietetics (Dom. Sci. D).....	3 [1½]	Management of House (Dom. Sci. E) ..	1
Poultry (An. Husb. F).....	1 [1]	Hygiene (Dom. Sci. F).....	1
Freehand Drawing.....	[2]	Textiles (Dom. Sci. G).....	[1½]
Physical Training.....	[1]	Vegetable Gardening (Hort. A).....	2 [1]
		Poultry (An. Husb. F).....	1 [1]
		Physical Training.....	[1]

## III. SPECIAL POULTRY COURSE.

For many years this college has offered a winter course in the poultry industry. In fact, the first poultry course to be offered in the United States was offered here fifteen years ago. The college will continue to offer a course during the winter term.

## Requirements for Admission to the Degree Courses.

## UNITS.

The requirements for admission are reckoned in units. A "unit" represents the successful completion of a year's study of a subject, to which have been devoted not less than one hundred and twenty recitation periods of sixty minutes each, or their equivalent (*e. g.*, one hundred and eighty periods of forty minutes each). Fourteen units are required. A student may obtain this amount of entrance credit from high-school work or from examination.

## GROUPS.

The entrance subjects are divided into two groups, A and B. Those in A, with one exception—solid geometry—are required of all candidates for admission.

## GROUP A.

The school year is reckoned at thirty-six weeks, the minimum length.

English.....	108 weeks.....	3 units.
German or French.....	36 weeks.....	1 unit.
Algebra.....	54 weeks.....	1½ units.
Geometry, Plane.....	36 weeks.....	1 unit.
Geometry, Solid—for engineering students only, 18 weeks.....		½ unit.
Physics.....	36 weeks.....	1 unit.
History.....	36 weeks.....	1 unit.

The remainder of the fourteen units must be taken from

### GROUP B.\*

No subject is accepted for more than the amount here stated or for less than two-fifths of a unit.

Foreign Language.....	216 weeks.....	6 units.
Geometry, Solid—for other than engineering students, 18 weeks.....		$\frac{1}{2}$ unit.
Botany.....	36 weeks.....	1 unit.
Chemistry.....	36 weeks.....	1 unit.
Geology.....	18 weeks.....	$\frac{1}{2}$ unit.
Physiography.....	36 weeks.....	1 unit.
Physiology.....	18 weeks.....	$\frac{1}{2}$ unit.
History.....	36 weeks.....	1 unit.
Drawing.....	36 weeks.....	1 unit.
Domestic Science.....	18 weeks.....	$\frac{1}{2}$ unit.
Shop Practice.....	18 weeks.....	$\frac{1}{2}$ unit.
Farm Practice.....	18 weeks.....	$\frac{1}{2}$ unit.

### METHODS OF ADMISSION.

On any or all of the subjects named in both groups, satisfactory standings from any reputable high school will be accepted in lieu of examination, on presentation of a copy of the student's full record in the high school, showing clearly the nature of the work pursued in each subject, time devoted to it, and grade of work done. This copy must be duly signed by the proper official of the school, and must be accompanied by a certificate of good moral character. The latter, however, may be from any reputable source. On application, blanks showing definitely the full nature of the information desired from the high school will be furnished.

Candidates not presenting satisfactory standings from reputable high schools will be examined, over ground corresponding to the number of points attached, on all the subjects of Group A and on such of Group B as they may offer. Examinations for entrance will be held at the opening of the college year in September, as announced in the calendar, page 10.

### SPECIFICATIONS OF GROUND TO BE COVERED.†

#### GROUP A.

These subjects, with the exception stated, are required of all students to the extent indicated by the number of units designated in each case.

\*Other subjects not here named will receive due consideration if presented on the application blank, with a statement of the work done.

†For any or all of the subjects described below the requirements of the College Entrance Examination Board, upon which these specifications are largely based, will be accepted. A circular stating these requirements in detail and blank forms of application for examination may be obtained by sending ten cents in stamps to the College Entrance Examination Board, Post Office Sub-Station 84, New York City.



## Languages.

ENGLISH, 3 UNITS.—In English two aims are sought: first, a knowledge of the language—including the acquisition of an ample vocabulary and power of effective expression—second, some acquaintance with the literature. To attain the first, grammar and composition must be thoroughly studied. Throughout the secondary-school course there should be much practice in writing along a variety of lines suggested by the pupil's experience, his general interests, and studies other than English. Spelling, punctuation, accuracy of idiom, should receive due attention in all written work; while correct and forceful oral expression should also be insisted upon.

To meet the requirement in literature certain selections are to be made from two lists of works—one for reading, the other for closer study. It is hoped to foster in this way a taste for good books and an intelligent appreciation of them. Committing to memory selected passages and reading aloud are strongly urged. In all cases some knowledge of the author's life and his place in literature should be acquired, while a more exacting study of selected texts would lay emphasis on form and style, meaning of particular words and phrases, and the significance of allusions. The list of books prescribed for 1913-14 may be obtained from the nearest high-school principal.

GERMAN, 1 UNIT.—During the first year the work should consist of drill in pronunciation, the rudiments of grammar, writing from dictation, simple composition and conversation, and the reading of from 100 to 175 pages of easy prose and poetry.

FRENCH, 1 UNIT.—The course in French should parallel that in German. During the first year there should be drill in pronunciation, the rudiments of grammar, writing from dictation, simple composition and conversation, and the reading of from 100 to 175 pages of easy prose and poetry.

## Mathematics.

ALGEBRA,  $1\frac{1}{2}$  UNITS.—The requirement in algebra comprises the four fundamental operations; factoring, highest common factor and lowest common multiple; fractions; linear equations; exponents; radicals; quadratic equations; simultaneous equations involving quadratics; binomial theorem for positive integral exponents. Problems should be given at frequent intervals in the work.

PLANE GEOMETRY, 1 UNIT.—This requirement is met by the usual theorems and constructions of standard text-books, numerous originals, and applications.

SOLID GEOMETRY,  $\frac{1}{2}$  UNIT.—The ground is covered by the usual theorems and constructions of standard text-books, originals, and applications.

## Science.

PHYSICS, 1 UNIT.—This course should consist of class-room work based on a standard text-book, accompanied by lecture-table demonstrations and by numerous practical problems. A parallel course in individual laboratory work is desirable, but is not absolutely required. In the case of laboratory work, one hour of credit will be allowed for each two hours spent in the laboratory.

### History. 1 unit.

The requirement in history will be met by presenting any one of the following subjects: ancient history, especially Greek and Roman, with the chief events of the early Middle Ages to the death of Charlemagne (814); medieval and modern European history from 814 to the present time; English history; American history and civil government.

### GROUP B.

From this group units are to be taken, in addition to those of Group A, sufficient to make up the whole number required. Any combination of units, including fractions not less than two-fifths, will be allowed.

### Languages.

GERMAN, 2 OR 3 UNITS.—The requirement for one unit is indicated under Group A. One unit will also be allowed for second and one each for third and fourth year work. During the second year the course should be a continuation of the first as regards grammar, composition, and conversation. The reading should consist of at least 200 pages of such texts as Arnold's *Fritz auf Ferien*, Wildenbruch's *Das Edle Blut*, Mosher's *Willkommen in Deutschland* and Benedix' *Der Prozess*. Third-year study should emphasize reading and advanced composition. Suitable texts are Riehl's *Der Fluch der Schönheit*, Freytag's *Bilder aus der deutschen Vergangenheit*, Lessing's *Minna von Barnhelm*, Schiller's *Wilhelm Tell*, and Heine's *Die Harzreise*. The fourth year's work should mark a decided advance in the mastery of vocabulary and idiom as shown both in speaking and writing. The works read may be made the basis for themes. The following reading matter is suggested: Freytag's *Soll und Haben*, Fulda's *Der Talisman*, Hauff's *Lichtenstein*, Scheffel's *Ekkehard*, Schiller's *Wallenstein*, *Maria Stuart*, or *Geschichte des dreissigjährigen Krieges* (Book III), Dahn's *Ein Kampf um Rom*, Goethe's *Dichtung und Wahrheit* (Books I-IV).

FRENCH, 2 OR 3 UNITS.—The requirement for one unit is indicated under Group A. One unit will also be allowed for second and one each for third and fourth year work. Throughout the second year the course should be a continuation of the first as regards grammar, composition, and conversation. At least 250 pages of such texts as Bruno's *Le Tour de la France*, Malot's *Sans Famille*, Mérimée's *Colomba*, Sarccey's *Le Siège de Paris*, and Hugo's *La Chute* should be read. In the third year emphasis should be laid on reading. Some time ought also to be given to advanced composition. Among suitable texts may be mentioned Racine's *Athalie*, Corneille's *Le Cid*, Molière's *Le Bourgeois Gentilhomme*, Sandeau's *Mademoiselle de la Seiglière*, Vigny's *La Canne de Jonc*. From the fourth year's study increased facility in conversation and composition should be gained, and any modern French, other than technical, should be read with ease. Such texts as the following are recommended: the prose works of Dumas père, Hugo's *Ruy Blas*, La Fontaine's *Fables*, Sainte-Beuve's *Essays*, Taine's *Origines de la France Contemporaine*, Pellissier's *Mouvement Littéraire au XIX<sup>e</sup> Siècle*. At least 600 pages should be read.

**LATIN, 1 TO 4 UNITS.**—A credit of one unit will be given for each year's work in Latin, covering in all a standard beginners' book, four books of Cæsar's Gallic War, six orations of Cicero and six books of Virgil's *Æneid*. It is expected that work in prose composition and sight reading will be included in each subject.

### Mathematics.

**SOLID GEOMETRY,  $\frac{1}{2}$  UNIT.**—See Group A. For other than engineering students.

### Science.

**BOTANY, 1 UNIT.**—The preparation in botany should include individual laboratory work recorded by notes and diagrammatic drawings. Field work is desirable, and should also be accompanied by notes. The notebook and drawings certified by the teacher should be presented at the time of application for entrance credit. The year's course of study should consist of three parts, viz.: 1. The general principles of the anatomy, morphology, physiology, and ecology of seed plants. 2. The natural history of the plant groups. The structure, reproduction, and adaptations to habitat of one or two types from each group should be studied. 3. Classification. A brief study of the subdivisions of the above groups. Ability to determine species of flowering plants is not essential. Any standard text-book covering the above field may be used.

**CHEMISTRY, 1 UNIT.**—An elementary text-book, such as William's *Elements of Chemistry* or *First Principles of Chemistry*, by Brownlee and others, should be covered by recitations. At least one exercise per week must be devoted to individual work in the laboratory. The pupil must perform forty or more experiments, such as are described in the Report of the College Entrance Examination Board, 1909, and keep a notebook in which he describes the apparatus used, records the phenomena observed, and states the conclusions in his own words, in each experiment.

**GEOLOGY,  $\frac{1}{2}$  UNIT.**—In geology, a study of the following subjects should be made: rock-forming minerals, their names and chemical constituents; earthquakes—their cause and effects; volcanoes—distribution, types, character of eruption, nature of erupted material; supposed physical state of the earth's interior; surface agencies destructive to rocks, with brief illustrations; processes of re-construction with illustrations; rocks—classification, according to origin, rock fracture and dislocation, rock structure due to erosion, metamorphic rocks, mineral veins and their method of formation; conditions determining land sculpture; the geological periods, with land elevations, and the characteristics of climate, plant and animal life of each period.

**PHYSIOGRAPHY, 1 UNIT.**—This course should include a consideration of the earth as a globe, the atmosphere, the waters of the earth, the lands, life upon the earth, and the reactions between these elements. Special attention should be given to the questions of climate, the winds, the weather, tides, ocean currents, and to the effect of the ocean in modifying climatic conditions. Attention should be directed to the manner in which the land was originally formed and to the way in which the original formation has been and is being modified by the action of erosion, the

winds, and frost. Throughout the course consideration should be given to the manner in which the various physical characteristics of the earth have affected life upon its surface.

**PHYSIOLOGY,  $\frac{1}{2}$  UNIT.**—The text-book work should cover material equivalent to that of Martin's Human Body or Hough and Sedgwick's Human Mechanism. In addition the applicant should present a notebook, showing laboratory work upon the elementary physiological processes and general structure of mammals.

**ZOOLOGY, 1 UNIT.**—The work should include: 1. The general natural history of a number of common vertebrates and invertebrates common to the locality where the work is given. 2. The classification of these forms into phylum, class and order, with the characteristics of the several groups. 3. The main anatomical features of one vertebrate, two arthropods (one an insect); an annelid, preferably the earthworm, a coelenterate, two protozoans (Amœba and Paramœcium recommended). 4. The general physiology of the above types involving digestion, absorption, circulation, excretion, and nerve function. These should be compared with the same functions in the human body. 5. The following subjects should be brought before the student in connection with the foregoing studies: asexual and sexual reproduction, alternation of generations, regeneration, fertilization, and segmentation of egg cells; adaptation; variations, evidences of relationship between similar groups, the cell structure of animals.

Certified notebooks must be presented, which include notes upon work and discussion in classroom and drawings of the forms dissected.

### History, 1 unit.

See Group A.

### Drawing, 1 unit.

This may be either freehand or mechanical. If freehand drawing is offered, the candidate should submit at least fifteen drawings, the majority to be in pencil, certified as his work by the instructor. These should show ability to sketch from various objects with considerable accuracy of proportion and clearness of line, and a fair understanding of the rules of perspective and light and shade as applied in freehand sketching. A candidate may also present the equivalent of five hours per week for one year in elementary mechanical drawing, lettering, or sketching from models.

### Domestic Science, 1-2 unit.

In domestic science the student must present satisfactory evidence of knowledge in the following subjects: the use and care of the kitchen equipment, general cleaning processes, the marketable forms of staple foods. She must also show credit for at least twelve cooking laboratory lessons of two hours each.

### Shop Practice, 1-2 unit.

The candidate may offer carpentry or any of the various forms of benchwork given in a well-equipped manual training school, equivalent to five hours per week for one-half year.



### Farm Practice, 1-2 unit.

By "farm practice" is meant familiarity with the operations of the farm, such as the harnessing of teams, the use of tillage implements, and the care of dairy animals.

### Degrees.

The degree of Bachelor of Science is conferred upon a student who has completed one of the four-year courses outlined on pages 18-28. The degree of Master of Science is conferred upon those holding a Bachelor's degree from this institution, in regular order, or from other institutions having equal requirements, upon the completion of one year of resident study, the presentation of a satisfactory thesis in applied or economic science, and upon passing examinations in the subjects pursued. Candidates not graduates of this college must file with the committee on graduate study, not later than October first, a detailed statement of their previous work, certified by the proper authorities. They must select, not later than November fifteenth, a major and a minor subject which must be closely related and have the approval of the committee on graduate study and of the professor in whose department the principal work is done. Major subjects may be selected in any of the following departments: agriculture; botany; chemistry; zoölogy; home economics; electrical, mechanical, and civil engineering. The minor may be selected from undergraduate subjects outlined in the catalogue; the major, however, must be advanced work specially arranged with the individual professor. The thesis must be typewritten, upon paper of the size and quality prescribed, and two copies must be in the hands of the president not later than June first.

The requirement for the degree of Mechanical Engineer, Electrical Engineer, or Civil Engineer, consists of three years of successful professional practice subsequent to the Bachelor's degree, one of which must have been in a responsible position; the presentation of an acceptable thesis; and the passing of examinations upon the investigations involved in the thesis.

A registration fee of five dollars is charged for an advanced degree. Students from outside the state pay a tuition fee of thirty dollars during the year of residence. The cost of a diploma is five dollars.



## Teachers' Certificates.

The following resolution adopted by the Board of Education of this state is self-explanatory: "The certification of the president (of this college) that an applicant for a teacher's certificate has pursued a secondary school course of four years, subject to the approval of the committee on qualifications, and in addition thereto has pursued a four years' collegiate course in the Rhode Island College will be received as evidence of the required qualifications in scholastic subjects for a teacher's certificate of the first grade."

By action of the Regents of the State of New York, taken June 9, 1910, the degrees of B. S. and M. S. from this college are accepted as a basis for the issuance of licenses to teach in that state.

## Expenses.

Tuition is free to residents of Rhode Island. To non-residents of the state, tuition is \$15.00 a term, or \$30.00 a year.

The regular college expenses are tabulated as follows:

Board, \$3.75 per week . . . . .	\$135 00
Room-rent, including heat and light . . . . .	30 00
Incidental fee, \$4.50 per term . . . . .	9 00
Student tax for Beacon, outside lectures, athletics, etc. . . . .	10 00
Laboratory expense, \$5 per term, estimated . . . . .	10 00
Uniform for military drill, estimated . . . . .	16 00
	<hr/>
	\$210 00

The first four items must be paid quarterly in advance; that is to say, \$46.00 will be required at the opening of the year, September 16, 1913, and also at each of the following dates: December 1, 1913; February 9, 1914; and April 13, 1914. Non-residents of the state should add to this sum \$7.50 for tuition each quarter. In order to secure dormitory accommodations, the student is required to deposit one dollar with the application, the dollar to be credited on the fall-term room-rent. If the student fails to take the room, the dollar is forfeited. The uniform also must be paid for at the opening of the college year, in advance. The item of laboratory expense includes all material used in the various laboratories, and the destruction, breakage, or marring of apparatus and tools, and must be paid when bill is presented at the close of each semester.

Nothing has been said concerning books. The probable cost of these will be from \$15.00 to \$30.00 per year. For miscellaneous expenses connected with college life, students should add a sum varying from \$10.00 to \$25.00. A fee of 50 cents will be charged for each second examination to make up a condition. Graduates pay the cost of diplomas, \$5.00. *No diplomas will be issued until all term bills have been paid.* Room-rent and incidental deposit will not be refunded on withdrawal during the quarter.

UNIFORM.—Every able-bodied male student is required to drill and to wear a uniform. The uniform must be paid for immediately on entering the college, when the students are measured for the suits. When worn only on drill and properly cared for, one uniform may last two or more years. The student may, however, wear his uniform all the time.

TRANSPORTATION.—The college conveys students daily to and from the railroad station free of charge. Once at the beginning and end of each term, a team conveys trunks to and from the station.

BOARDING STUDENTS.—The price of board for 1913-14 will be \$3.75 per week. Students who *leave regularly every week* on Friday afternoon and return Monday morning will receive a rebate for time of absence. No person will be admitted to the dining-room until he has secured from the bursar a meal ticket, on the back of which will be found the rules governing the holder of such ticket. After this ticket is issued, all charges for board will be made in accordance therewith, unless the student has the ticket changed by the bursar. Arrangement of charges for meals sent to students' rooms for any cause must be made in advance.

DORMITORIES FOR MEN.—East Hall is now in use, affording excellent accommodations for men students. The two upper floors are entirely devoted to rooms for students. The sanitary conveniences on each floor are excellent and ample, including a full complement of shower baths. The first floor contains a large assembly hall, a handsome social room for the men, and a dining-room and kitchen fitted with all modern equipment. South Hall and Watson House are devoted to the use of the fraternities and afford very desirable rooms for dormitory purposes. Two houses in the village of Kingston are also hired by the college for fraternity dormitories.

**DORMITORY FOR WOMEN.**—During the summer of 1909 the interior of Davis Hall was entirely reconstructed. On the first floor are the administration offices. With the exception of the offices of the extension department on the second floor, the upper floors of the building are utilized for the women's department. The accommodations for women students in this building are under careful supervision, and compare favorably with those at any women's college in the country. There is a neat hospital, with all necessary adjuncts. The oversight of the young women is efficient, kindly, and painstaking. Attention is especially invited to the facilities and arrangements for the welfare of young women.

**FURNITURE.**—The rooms in the women's dormitory are provided with necessary furniture, including mattresses, but no other bedding material. *All students in the men's dormitory are required to supply their own furniture and bedding.* The necessary furniture may be obtained at the college when desired. A room may be furnished for from \$8.00 to \$10.00. Iron bedsteads three feet wide are included under room-rent. The furniture, if properly kept, may be sold, when the student leaves, for one-half to three-fourths the original price. All students should bring with them such articles as sheets, blankets, pillow, pillow-slips (all for single bed), and towels. Men students are required to purchase mattresses at the college.

**ROOMS IN THE VILLAGE.**—Arrangements have been made for rooms in the village of Kingston, some of these being under college management and others in private houses. In the case of the former, room rent will vary from 60 cents to \$1.00 per week, with heat and light furnished, the student to provide other furnishings. Furnished rooms in private houses for students who occupy them throughout the college year range from \$1.25 to \$2.00 per week.

**COLLEGE STORE.**—Students will be required to pay cash at the store for all books and other supplies.

**DAMAGE FUND.**—All damage not due to ordinary wear will be assessed to students as follows:

1. Students at once acknowledging damage and agreeing to pay for same will be assessed actual cost of repair, including labor.
2. Students found guilty of such damage, but not acknowledging and settling for the damage will be charged double the cost of repair

3. Students will be responsible for damage in their own rooms. Damage that is not settled as above may be assessed to all the students or to a group of students, pro rata. Each case and the amount of assessment will be considered on its merits.

### Employment at the College.

There is a certain amount of labor about the college buildings, on the farm, at the experiment station, and in the offices and laboratories, for which students will be employed whenever it is feasible to do so. Industrious students frequently earn an amount which aids considerably in paying their expenses,—a sum varying from \$25.00 to \$125.00 per year.

In view of the fact, however, that the amount of this work is strictly limited and that it is not the policy of the college to create such work, and, furthermore, because of the increasing number of students and the more frequent applications for student labor, it seems desirable to state the conditions under which this work will hereafter be assigned.

1. Application for work must be made on a blank which will be issued to the student on request. *Persons desiring such work must bring a statement certifying to what extent the student must depend upon himself for support.* It must be borne in mind that the student can not make this certification for himself. Application for work, however, under no circumstances creates a claim on the college that work shall be assigned the applicant.

2. At a certain time before the opening of the fall term all applications for work will be considered and appointments will be made after due consideration of

- (a) Capability for the work.
- (b) Trustworthiness.
- (c) Good record as a student.
- (d) Need for financial aid.

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[Note: Other things being equal, preference will be given to residents of the State, to upper-class students, and to those who room and board at the college.]



3. Such appointments are subject to revocation at any time, for
  - (a) Incompetency.
  - (b) Unfaithfulness in discharge of duty.
  - (c) Misconduct or disloyalty to the institution.
  - (d) Bad record in studies.
4. Such appointments must be recognized as
  - (a) A mark of trust and responsibility.
  - (b) A real and vital part of one's training for promptness, for initiative, and for leadership.
  - (c) One of the very best criteria the teacher has in determining his estimate of the student's character, both for his own guidance and for recommendation to employers.

5. Payment for services will vary from ten to fifteen cents per hour, according to the grade and difficulty of the work and the experience of the student. In general, students should not expect more than ten cents an hour for the first year. It is a rule of the college that any student desiring to perform more than twenty hours of student labor per week must secure permission from the faculty council. In the future, it may be necessary to limit the amount which any one student may receive for student labor.

Some young people have the impression that the college offers such opportunities for self-help that it is safe to enter with practically no funds, relying solely on money earned while here. In exceptional cases this may be done, but prospective students are strongly advised not to enter until they have at least \$100.00 at their disposal. A student who has to make his own way must also plan to work steadily during both the short and long vacations. Occasional vacation work at the college can be furnished to students, but as a rule they should look elsewhere for this class of work.

### Religious Influences.

This college is a state institution, and consequently, the widest latitude is given to all creeds and forms of religious belief. Simple chapel exercises are held on one day of each week and are conducted by the president or some other member of the faculty. It is desired and expected that all students will attend chapel.



A branch of the Intercollegiate Young Men's Christian Association is doing active work among the men students, holding a meeting weekly throughout the year. This association conducts courses in bible study, and is taking the lead in endeavoring to establish sound and high ideas of college life.

The Young Women's Christian Union is doing a similar work for the young women.

The village church cordially invites all students to attend its services and if possible, to join its membership. Every effort is made by the college to minister to the higher life of the students and to bring before them the noblest ideals, without in any way attempting to coerce them to particular beliefs.

### The College Lecture Association.

Faculty and students, uniting with residents of the vicinity, conduct a winter lecture course, the aim of which is to introduce talented speakers upon subjects both entertaining and instructive. The association may be looked upon as a permanent and important factor in college activities. For the season of 1912-1913, the following program was secured:

Tuesday evening, October 22. Annie S. Peck, Lecture: "The Conquest of Mt. Hauscaran."

Saturday evening, November 2. Rogers & Grilley: Musical and Literary Program.

Thursday evening, December 5. Lincoln Wirt, Lecture: "The Conquest of the Arctic."

Wednesday evening, January 29. Byron Piatt, Lecture: "The Mass Against the Man."

Wednesday evening, February 19. Parker's Boston Imperials. Violin, flute and harp; solos, male and mixed quartettes.

Thursday evening, March 27. Mrs. Phidelah Rice, Reading: "Miss Hobbs."

### Equipment.

FARM AND CAMPUS.—The landed property of the college has a total area of 170 acres. About forty-one acres of this area are devoted to buildings, lawns, and athletic grounds; nine acres are in forest; and

six are being developed as an arboretum. Thirty-five acres are used for the field investigations of the experiment station, which are valuable object lessons in agricultural instruction. The remainder is used for garden and orchard, and for raising crops for the live stock. The total value of land, buildings, and equipment is nearly \$400,000.

**AGRICULTURAL BUILDINGS.**—The agricultural buildings consist of a commodious dairy barn with laboratories for instruction in farm dairying and milk testing; a horse barn of modern construction; a greenhouse with an area of 10,000 square feet; a building attached to the greenhouse for class work in agronomy and horticulture, and a group of buildings used for instruction and experimentation in poultry raising.

**ENGINEERING BUILDINGS.**—The engineering department is equipped with modern machine, forge, and pattern-making shops, located in a building known as Ladd Laboratory. In Lippitt Hall, a granite building, 134 by 40 feet, are housed the lecture rooms, drawing rooms, testing rooms, and engineering laboratories of the department. A boiler house and a dynamo room, from which heat, power, and light are furnished for the various buildings, are a part of the engineering outfit for practical instruction and for experimentation in electrical and steam engineering.

**SCIENCE HALL.**—A granite building 154 by 60 feet and three stories high will be ready for occupancy in September, 1913. Here will be housed the departments of chemistry, physics, zoölogy, bacteriology, and botany. Each department will be provided with commodious laboratories, recitation room, and department library room. An amphitheatre having a seating capacity of 150 and provided with suitable projection apparatus, will serve for the common use of the various departments requiring such a room.

**HOME ECONOMICS LABORATORIES.**—The special laboratories of this department are located in South Hall and in a small building near it.

**TAFT LABORATORY.**—The laboratories and offices of the experiment station are housed in a granite building known as Taft Laboratory.

**DORMITORIES.**—East Hall is a stone building for men students. On the first floor are an assembly hall, a social room, and a college commons with a seating capacity of 156. Davis Hall is also a stone

building, the upper stories of which are used as a dormitory for women students, while the offices of administration are located on the first floor. South Hall and Watson House are small dormitories. The college also controls two small dormitories in the village of Kingston.

**DRILL HALL AND ATHLETIC HOUSE.**—The drill hall, a room 143 by 40 feet, located in Lippitt Hall, is used both as an armory and as a gymnasium. A dressing room and bath room are attached to the hall. An athletic house provided with bath and dressing rooms for out-of-door sports is located at the athletic field, which is equipped with cinder track and straightaway for track athletics. Tennis courts for both men and women are also provided.

### The Library.

The library occupies two large adjoining rooms in Lippitt Hall, and numbers over seventeen thousand volumes. The books are arranged in stacks, to which the students have free access. The Dewey system of classification is used; and a dictionary catalogue gives author, title, and subject entries. As the library has been from the first intended for reference work, the various departments of instruction have made their selections with the greatest care. In the reading-room, one hundred and twenty of the leading periodicals—of literary, scientific, and general interest—are on file. From time to time these are bound, and prove of great value in reference work.

Since the library has been a government depository twenty-five hundred books and pamphlets have been received, which are of value in scientific investigation and research.

The library is open every week day from 8:00 A. M. to 6:00 P. M., with the exception of an hour at noon. The librarian or her representative is in constant attendance, to aid any one in search of information. As the college is an institution designed to further the educational interests of Rhode Island, all residents of the state are at liberty to use the library.

### Location.

The college campus is one and one-half miles from Kingston station, which is at the junction of the main line of the N. Y., N. H. & H. R. R. with the Narragansett Pier branch, thus insuring excellent

railroad accommodations. The buildings are on a hill which commands an extended view of the surrounding country—a location both healthful and beautiful. Sixteen trains stop daily at the station, so that the college is accessible from Providence or from New York City at almost any hour in the day. The ride from Providence is about forty to forty-five minutes in length. From New York the time is some four hours.

Pictures of the college buildings are published in Supplement to Volume IX, No. 1, which may be had by addressing the President of the college.

## Departments of Instruction.

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The following subjects are offered in the different departments. All subjects in the departments of instruction preceded by a Roman numeral count towards the degree of B. S. All subjects preceded by a capital letter lead to a certificate.

### Agriculture.

PROFESSOR ADAMS, PROFESSOR PUTNEY, ASSISTANT PROFESSOR COBB,  
MR. BURDICK, MR. GODIN, MR. LAMBERT.

The instruction given in this subject is grouped under the three heads—agronomy, animal husbandry, and horticulture. The aim is to give such theoretical and practical training in the fundamentals of agriculture as will enable those who take this work to fill positions of trust and responsibility, either as owners of their own farms, managers of estates, or along other lines of agricultural activity.

That the graduates from this department may be fitted to take up the work outlined above, all students registered for a degree in agriculture will be required to show certain familiarity with the ordinary operations of the farm, before such degree is given.

In order that those students who have not had an opportunity to receive training in the practical work of the farm may become familiar with some of the more common operations, they will be required, during their connection with the college, to do a certain amount of routine farm work without pay. This will include work in the dairy barn, poultry yard, greenhouses and gardens. This training will be in addition to the laboratory credits prescribed in the regular course. The amount of such work required will depend upon the efficiency shown by the student. No college credits will be given for this work, yet the neglect of this phase of the training may be considered a sufficient cause for dismissal from the institution. Students may be required to spend one or two summers upon the farms in order to get additional training. Persons taking practical work upon farms



during the summer vacations will be required to furnish a certificate from their employers, stating the time spent on the farm and the kind and amount of work accomplished. Special attention must be given to that branch of agriculture which the student is to elect during the Senior year.

### AGRONOMY.

PROFESSOR ADAMS, MR. BURDICK.

The instruction in agronomy may begin the first term of the Sophomore year, when a study is made of the forage plants. Following this work are subjects dealing with the other field crops and their uses as food for man and beast. In the work with soils and fertilizers, especial emphasis is placed upon the problems connected with the proper use of chemical manures.

The business side of farm life is given attention in the subjects treating of farm equipment and management. Work with farm machinery is a laboratory course, in which the students are taught how to care for, repair, and operate modern farm machinery. In the Senior year there is instruction in plant breeding, a subject which is of the utmost importance to one who would make the most of the opportunities in crop production. Instruction in agricultural experimentation deals largely with the application of the results which have been obtained by the experiment station, to the practical problems of the farm.

The equipment of the department includes the college farm and barns; also the farm machinery, consisting of a good line of tillage implements, fertilizer distributors, grain drill, and harvesting machinery. A well-equipped blacksmith shop is also provided.

Students have the advantage of the field experiments which are being conducted by the experiment station upon fertilizer problems and with various rotations.

### Subjects.

II. Forage Crops.—History and development of the plants used for forage; silage, methods of construction of silos. *Two recitation credits per week, first term. Elective for Sophomores in Agriculture.*

III. Soils and Fertilizers.—Origin and constituents of soils; texture, moisture, drainage, methods of tillage. Farm manures, artificial manures, composi-

tion and use; formulas for various crops. *Four recitation and one and one-half laboratory credits per week, first term. Required of Juniors in Agriculture. Option for Juniors in Applied Science. Prerequisite: Chemistry I and II.*

IV. Farm crops.—Origin and history; production and place in the rotation of clovers, grasses, and root crops. *Three recitation credits and one laboratory credit per week, second term. Required of Juniors in Agriculture. Option for Juniors in Applied Science. Prerequisite: Botany I and II.*

VI. Farm Machinery.—Development of farm machinery, methods of construction, function, and operation. *Two recitation credits and one laboratory credit per week, second term. Option for Juniors in Agriculture. Mr. Burdick.*

VII. Farm Management.—Discussion of agricultural methods, choice of a farm, capital, marketing, types of farming accounts. *Two recitation credits per week, second term. Required of Juniors in Agriculture. Prerequisite: Agronomy III and IV.*

VIII. Farm Management (advanced).—Individual problems of farm management are assigned. Abandoned farms will be visited and a critical study made of the existing conditions. *Two recitation credits per week, first term. Option for Seniors in Agriculture.*

IX. Literature.—History of agricultural and horticultural literature; a study of the different types of agricultural literature as illustrated by ancient and modern authors. Reports upon special topics. *Two recitation credits per week, second term. Option for Seniors in Agriculture.*

X. Agricultural Experimentation.—Objects, methods, and results of agricultural experimentation. A study of federal and state aid to agriculture as shown in the work of the United States Department of Agriculture and the Experiment Stations. *Three recitation credits per week, first term. Required of Seniors in Agriculture.*

XI. Plant Breeding.—A discussion of the development of plants under cultivation; with reference to heredity, environment, variation, and selection. *Three recitation credits per week, first term. Required of Seniors in Agriculture. Option for Seniors in Applied Science. Prerequisite: Botany I and II.*

A. Soils and Fertilizers.—An elementary course upon the origin and nature of soils. Fertilizers; natural and artificial manures; preparation and use; fertilizer arithmetic. *Four recitation credits and one laboratory credit per week, second term. Required of Short-Course students in Agriculture, first year.*

B. Crops and Rotations.—Methods of culture and uses of the grasses, clovers, cereals, and root crops. Rotation for the various types of farms. *Three recitation credits and one laboratory credit per week, first term. Required of Short-Course students in Agriculture, second year.*

C. Farm Management.—An elementary course upon the principles of farm management, equipment, cost of production. *Four recitation credits per week, second term. Required of Short-Course students in Agriculture, second year.*

D. Farm Machinery.—Care and repair of farm implements. *One recitation and two laboratory credits per week, second term. Required of Short-Course students in Agriculture, second year.* Mr. Burdick.

### ANIMAL HUSBANDRY.

PROFESSOR PUTNEY, MR. BURDICK, MR. LAMBERT, MR. RODMAN.

The subjects in animal husbandry are so arranged as to furnish practical as well as theoretical instruction in the selection, care and management of the live stock on the farm. All students who graduate in agriculture are required to take stock-judging, feeding, and veterinary medicine. In this way a person learns to select, feed, and care for farm animals. Students in animal husbandry are offered advanced stock-judging, breeding and the management of herds, flocks, and studs. The first work in dairying is offered during the second term of the Junior year, and one who cares to specialize will find an elective throughout the Senior year.

Instruction in poultry culture is given during the second term of the Freshman year, and is both theoretical and practical. In the Junior year, an elective is offered in advanced poultry judging. The equipment in poultry is particularly strong. The college poultry plant enables one to obtain a large amount of practical experience in incubation, brooding and management. In addition to the poultry in the college yards, the students have opportunity to follow the investigations which are being conducted by the experiment station. A six weeks' course in poultry keeping is also offered during the winter months, full information concerning which may be obtained by addressing the president of the college.

### Subjects.

I. Stock Judging.—Scoring and comparison of various types of horses, cattle, sheep and swine. Study of the special purpose or special type animal. *Two laboratory credits per week, second term. Required of Freshmen in Agriculture.* Professor Putney.

II. Advanced Judging.—A continuation of the work given in Animal Husbandry I in practice of judging and studying types of farm animals. The work will largely be by the method of comparative judging. Tracing of pedigrees. *Two laboratory credits per week, second term. Option for Juniors in Agriculture.* Professor Putney.

III. Breeds.—History and character of the principal breeds of farm animals. Study of conditions to which each is adapted. *Two recitation credits per week, second term. Option for Juniors in Agriculture.* Professor Putney.

IV. Principles of Breeding.—A study of the science and art of breeding. Discussion of the laws of heredity as applied to improvement of animal types. *Three recitation credits per week, second term. Required of Seniors in Animal Husbandry. Elective for others. Option for Seniors in Applied Science. Prerequisite: Zoölogy III.* Professor Putney.

V. Management of Dairy Cattle.—This course covers the field of milk production. It includes the building up of the dairy herd; the proper care of dairy cattle under different conditions; the dairy barn; special problems of feeding for milk production; advertising; fitting for sale and show ring. *Two recitation credits per week, first term. Option for Seniors in Agriculture.* Professor Putney.

VI. Feeding Farm Animals.—Principles of animal nutrition. Feeding standards. Making up balanced rations. *Three recitation credits per week, first term. Required of Juniors in Agriculture. Option for Seniors in Applied Science. Prerequisite: Chemistry XIV.* Professor Putney.

VII. Dairy Practice.—Lectures and laboratory practice in Babcock test and in handling milk and making butter on the farm. Herd testing methods. *One recitation and two laboratory credits per week, second term. Required of Juniors in Animal Husbandry. Elective for others.* Mr. Burdick.

VIII. Dairy Practice.—Advanced work. Pasteurization. Starters. Testing for adulteration. Acidity. Moisture. *One recitation and two laboratory credits per week, throughout the year. Option for Seniors in Agriculture.* Mr. Burdick.

IX. Research and Literature.—*Hours to be arranged, first term. Option for Seniors in Agriculture.* Professor Putney.

X. Veterinary Medicine.—Combating disease from the farmer's standpoint. Obstetrics. Injuries. *Three recitation credits per week, second term. Required of Seniors in Agriculture. Prerequisite: Zoölogy III.* Professor Putney.

XI. Farm Buildings.—Plans, location, and estimate on the various farm buildings. *Two laboratory credits per week, second term. Option for Seniors in Agriculture, and Seniors in Applied Science.* Mr. Rodman.

XII. Poultry Craft.—A brief study of breeds, care, and management of all classes of fowls. *One laboratory credit per week, second term. Required of Freshmen in Agriculture.* Mr. Lambert.

XIII. Judging Poultry.—Practice in scoring and judging all classes of fowls. *Two laboratory credits per week, second term. Option for Juniors in Agriculture.* Mr. Lambert.

XIV. Poultry Husbandry.—Study of poultry investigations. *At least two laboratory credits per week, throughout the year. Option for Seniors in Agriculture. Option for Seniors in Applied Science, first term.* Mr. Lambert.



XV. Management of Beef Cattle and Horses.—During the first nine weeks the course will cover practical methods of beef production. Studies will be made of successful practices in feeding for the market as well as advertising, fitting for sale and show ring, and the general care and management of beef cattle. During the last nine weeks, similar studies will be made in horse production, including market classes of horses, their production and utility, and successful methods of handling and training horses. *Two recitation credits per week, first term. Option for Seniors in Agriculture.* Professor Putney.

XVI. Management of Sheep and Swine.—During the first nine weeks the best systems of sheep husbandry will be studied. This will include rearing for mutton and wool; production of spring lambs; fattening sheep and lambs for market; general care and management of the breeding flock; advertising, fitting for sale and the show ring. During the last nine weeks similar studies will be made in pork production, including a study of foodstuffs with reference to their adaptability to pork production. *Two recitation credits per week, second term. Option for Seniors in Agriculture.* Professor Putney.

A. Breeds.—Breeds of horses, cattle, sheep, and swine. Emphasis is placed on the type best fitted to the agriculture of New England. *Two recitation credits per week, first term. Required of Short-Course students in Agriculture, first year.* Professor Putney.

B. Stock Judging.—Judging of the various classes of animals and their adaptability to different purposes, as cattle for milk or beef production, horses for driving or draft. *Two laboratory credits per week, first term. Required of Short-Course students in Agriculture, first year.* Professor Putney.

C. Dairy Practice.—Babcock test for dairy products, production of sanitary milk, and butter making. *One recitation and two laboratory credits per week, first term. Required of Short-Course students in Agriculture, second year.* Mr. Burdick.

D. Stock Feeding.—Principles of nutrition. Compounding rations. *Three recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.* Professor Putney.

E. Principles of Breeding —A study of the selection of animals, heredity, and variation. *Two recitation credits and one laboratory credit per week, second term. Required of Short-Course students in Agriculture, second year.* Professor Putney.

F. Poultry Breeds and Care.—A study and comparison of the different breeds of poultry, care of incubators and brooders, methods of feeding for the production of meat and eggs. *One recitation and one laboratory credit per week, throughout the year. Required of Short-Course students in Agriculture and Domestic Science, second year.* Mr. Lambert.

G. Care of Animals.—Housing, care, and management of farm animals. Practical directions for handling of stock on the farm. *Two recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.* Professor Putney.



## HORTICULTURE.

ASSISTANT PROFESSOR COBB, MR. GODIN.

The aim of the instruction in horticulture is to help the student to understand the practical and scientific problems which arise in the various lines of work included under this subject.

The headquarters of the department are in the horticultural building. The main building contains the office and recitation rooms, together with photographic rooms. Attached to this building are greenhouses of modern construction, containing over 8,000 square feet under glass, 3,000 square feet of which is used by the experiment station for fertilizer experiments. The remainder is devoted to college work, and thus affords an excellent opportunity to become familiar with the growth of plants under glass. The land devoted to the department comprises the college gardens; and the fruit orchards, containing over 150 varieties of fruit, which afford an excellent opportunity for the study of apples and pears especially. There is also a small vineyard. A collection of flowering shrubs enables the student in landscape gardening to study, in the natural state, the material used in this work.

## Subjects.

I. Propagation of Plants.—Different methods, including seed testing. Soft, green, and hardwood cuttings. Layering, grafting, and budding. *One recitation and one laboratory credit per week, first term. Required of Freshmen in Agriculture and Applied Science.*

II. Vegetable Gardening.—Underlying principles and types of vegetable gardening; study of individual crops; text-book work. *Two recitation credits per week, second term. Required of Freshmen in Agriculture. Option for Seniors in Applied Science.*

III. Fruit Culture.—Fundamental principles of orcharding; soil, fertilizer, and cultivation. Methods of laying out orchards and planting. Tillage, pruning and spraying. Harvesting and storing fruits. Collateral reading and practical work. *Two recitation credits per week, first term. Required of Juniors in Agriculture. Option for Juniors in Applied Science.*

IV. Spraying and Pruning.—Preparation and application of spray mixtures; insecticides and fungicides. Methods of application for different orchard enemies, and machinery used. Pruning of trees and ornamental shrubs. *One recitation and one laboratory credit per week, second term. Required of Freshmen in Agriculture. Option for Seniors in Applied Science.*

V. Greenhouse Construction and Management.—Study of the different types of glasshouse structures; methods of heating and ventilating. *One recitation and two laboratory credits per week, second term. Option for Juniors in Agriculture.*

VIa. Floriculture.—History of floriculture. Study of greenhouse plants, collectively and individually; practical work in propagation, potting, watering, ventilating, fumigating, and spraying. Study of bulbs, bedding plants; palms and ferns. *One recitation and two laboratory credits per week, entire year. Option for Seniors in Agriculture. Prerequisite: Horticulture V.*

VIII. Literature of Horticulture.—See Agronomy IX.

IX. Assigned Work.—Special subjects chosen by the student. *Option for Seniors in Agriculture. Hours to be arranged.*

X. Pomology.—Orchard and bush fruits. Study of types; origin, and history; classification, description, and methods of handling. Orchard management. *One recitation credit and two laboratory credits per week, throughout the year. Option for Seniors in Agriculture. Prerequisite: Horticulture III.*

XI. Advanced Vegetable Gardening.—Study of one or more crops selected by student. Practical work, research work, and text-book. *One recitation credit and two laboratory credits per week, second term. Option for Seniors in Agriculture.*

XII. Plant Breeding.—See Agronomy XI.

XIII. Advanced Landscape Gardening.—A continuation of Horticulture VII, including an advanced study of the art which embraces the following points. Topographical surveying and map work, drainage, grading, specifications, etc. Park and cemetery work, civic improvement. *One recitation and two laboratory credits per week, throughout the year. Option for Seniors in Agriculture. Prerequisite: Horticulture XVI.*

XIV. Arboriculture.—Study of ornamental trees, shrubs, and other plants, both native and exotic, which are used in landscape gardening. This course is designed to enable the student to become familiar with the character, habit and adaptation of ornamental plants. *One recitation and one laboratory credit per week, first term. Option for Sophomores in Agriculture.*

XV. Tree Surgery.—A study of methods used in treating diseases of trees and shrubs. Treatment of insect injuries, preventive and remedial measures to be used in case of neglect, and mechanical injuries, such as chaining and bolting. Cement filling of cavities. *One recitation and two laboratory credits per week, second term. Option for Seniors in Agriculture.*

XVI. Landscape Gardening.—This subject is designed for students in general and consists of the rules and principles governing landscape gardening, the design and laying out of grounds for farm, village and city places, making of lawns, flower beds, etc. *One recitation and two laboratory credits per week, first term. Required of Juniors in Agriculture. Option for Seniors in Applied Science. Prerequisite: Horticulture XIV.*

A. Vegetable Gardening.—Fundamental principles of vegetable growing. Practical work in cold frames, hotbeds, and garden planting. *Two recitation*

*credits and one laboratory credit per week, second term. Required of Short-Course students in Agriculture and Domestic Science, second year.*

B. Fruit Culture.—Study of fruits; propagation; planning fruit gardens and plantations; harvesting and packing; care. *Three recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.*

C. Nursery Practice.—Propagation by seed, cuttings, grafting, budding, starting, and care of nursery. Selection of stock, and initial pruning. *One recitation and one laboratory credit per week, second term. Required of Short-Course students in Agriculture, first year.*

D. Floriculture.—Propagation of flowering plants, care of window gardens, design of flowerbeds and borders. *Two laboratory credits, second term. Required of Short-Course students in Domestic Science, first year.*

E. Spraying and Pruning.—A study of the methods used in combating insect pests and plant diseases. Preparation and application of fungicides and insecticides. Study of nozzles, pumps, etc. *One recitation and one laboratory credit per week, second term. Required of Short-Course students in Agriculture, second year.*

F. Home Grounds.—A study of the materials to use, the essential principles of the art. Practice in designing, planting, and care of home grounds. *Two recitation credits per week, second term. Required of Short-Course students in Agriculture, second year.*

## Bacteriology.

DR. HADLEY.

The instruction in bacteriology is of necessity arranged to meet the requirements of several classes of students. First, those who desire a general knowledge of the bacteria and their relation to problems of human life; second, those who desire especially a knowledge of bacteriology as applied to the practical problems of agriculture; and third, those whose main interest lies in the relation of bacteria to disease and to problems of public health and hygiene. Attempt is made to give equal emphasis to each of these phases of the subject.

## Subjects.

I. General Bacteriology.—A subject designed to give the student a general knowledge of bacteria. It involves especially a study of laboratory methods and technique; also the isolation and determination of unknown species, the preparation of culture media, etc. Laboratory work supplemented by lectures. *Two laboratory credits and one recitation credit per week, first term. Required of Seniors in Agriculture. Elective for others.*

II. Advanced Bacteriology.—A continuation of I, designed to acquaint the student with the varied application of bacteriology to practical problems. It includes a study of the bacteriology of air, water, milk and other foods; the relation of bacteria to dairying, agronomy, hygiene, and to the prevention, diagnosis and treatment of disease. Laboratory work supplemented by lectures. *Two laboratory credits per week, second term. Elective. Prerequisite: Bacteriology I.*

III. Bacteriological Seminar.—Designed to afford opportunity for the discussion of bacteriological problems. *One recitation credit per week, second term. Elective. Prerequisite: Bacteriology I and II.*

## Botany.

PROFESSOR MERROW.

The aim of the department is to give a general knowledge of plant life, followed by subjects of an economic nature. The college is well located for carrying on this line of work. The native flora is extensive, and an abundance of material is furnished by the cultivated plants of the gardens and fields of the college farm. The green houses supply fresh material for winter use, and the herbarium of 4,500 specimens is a useful reference collection. The laboratory is equipped with dissecting and compound microscopes, a microtome, paraffin bath, and simple physiological apparatus. Charts and models are provided for lecture demonstrations. A good working library, including several botanical periodicals, is an important factor in the outfit for instruction.

## Subjects.

I. General Botany.—A study of common plants, their structure, physiology, evolution, and adaptation to environment. *Two laboratory credits and one recitation credit per week, throughout the year. Required of Freshmen in Agriculture, Applied Science, and Home Economics.*

II. Botany of crops and weeds.—*Two laboratory credits and one recitation credit per week, first term. Required of Sophomores in Agriculture and Applied Science.*

III. Trees and shrubs.—The determination of native and introduced trees and shrubs in summer and winter condition. *One laboratory or field credit per week, throughout the year. Option for Seniors in Applied Science.*

IV. Forestry.—The management of New England wood lots. *Two credits per week, second term. Given in alternate years, 1912, 1914. Required of Juniors or Seniors in Agriculture. Option for Juniors in Applied Science. Instructor, Mr. \_\_\_\_\_.*



V. Histology.—Seed plants are studied by the usual histological methods of imbedding, sectioning, and staining. *Four laboratory credits and one recitation credit per week, first term. Elective for Seniors in Agriculture. Option for Juniors in Applied Science.*

VI. Pathology.—Diseases caused by parasitic fungi and the remedies for them. *Four laboratory credits and one recitation credit per week, second term. Elective for Seniors in Agriculture. Option for Juniors in Applied Science.*

VII. Assigned Work.—*Three credits throughout the year. Elective for Seniors in Applied Science and Agriculture.*

A. Plant Life.—Elementary agricultural botany. *Two laboratory credits and one recitation credit per week, throughout the year. Required of Short-Course students in Agriculture and Domestic Science, first year.*

## Chemistry.

DR. LEIGHTON, ASSISTANT PROFESSOR SMITH, DR. HARTWELL.

Instruction in this department begins in the Freshman year with experimental lectures, recitations, and laboratory practice in general and descriptive chemistry. The work is designed to give a thorough elementary knowledge of theoretical and descriptive inorganic chemistry, including the principal technical processes, and a brief account of the carbon compounds. As much attention as is practicable in a general course is given to the applications of the science to the problems of life. Two periods per week for the first half-year and three for the second half-year are devoted to the lectures and recitations, and three hours per week for a half-year to the practical work in the laboratory, where the student has an opportunity to verify some of the chemical theories and to become familiar with substances and their chemical behavior. During the second half of this year the laboratory period is devoted to qualitative analysis, which continues through the first half of the Sophomore year. The subject is taught in part by means of recitations and lectures, but mainly by work in the laboratory. Students are required to complete a systematic course in basic and acid analysis, and to analyze correctly a number of alloys, salts, and minerals.

Quantitative analysis is taught mainly by laboratory practice, but sufficient time is devoted to lectures and recitations to teach thoroughly the fundamental principles involved. The work comprises gravimetric and volumetric analysis, and the quantitative determination of salts, alloys, ores, minerals, and commercial and food products.



In the course in technical gas analysis the student analyzes such gases as air, and illuminating and chimney gases. The work in assaying is designed to familiarize the student with the practical methods of sampling and assaying gold, silver, and lead ores. Determinative mineralogy, which includes blow-pipe analysis and crystallography, is taught by recitations and laboratory work. The student learns the physical properties of the common minerals, and their identification. The above subjects cover a comprehensive study of analytical chemistry, and are intended to give the student such theoretical and practical knowledge as to prepare him for analytical work of any kind.

The study of organic chemistry begins with a short course, designed to cover the general principles and methods, and to include a description of the more important compounds. The subject is continued by those who wish to specialize in chemistry in a more extended course covering the aromatic series and the chemistry of the dyestuffs, and accompanied by laboratory work in organic preparations and analysis. The theoretical and basic principles of chemistry, with their general application, are thoroughly studied by recitation, lectures, and laboratory work in the course in physical chemistry.

The descriptive side of industrial chemistry, which comprises a general survey of the technical applications of chemical principles to the arts and industries, is studied by recitation work; while practical technical operations, such as textile coloring, suited to the needs of the individual student, are studied by laboratory practice. The principles and practice of the industrial preparation of iron, steel, and other metals from their ores are taught by recitation and lecture work in the course in metallurgy.

Agricultural chemistry, required of agricultural students in the Junior year, embodies the chemistry of soils and fertilizers, also the chemistry involved in the changes which take place during the growth of animals and plants, as well as in the storage or manufacture of the ordinary farm products.

Subject XXI is intended to familiarize the student with the general field of chemical literature, and to inculcate the habit of keeping up with the recent advance in chemical science by reports and discussion of articles appearing in the chemical journals. This course is preparatory for Subject XX, which involves original investigation.

The laboratory is supplied with water, gas, and compressed air at each desk; it is also well equipped with apparatus for the subjects mentioned below. Among the more important pieces of apparatus are a polariscope, microscope, sodium press, hot-air engine, five analytical balances, one assay balance, filter press, Wheatstone bridge, combustion furnace, bomb furnace, assay muffle, crucible and roasting furnaces, ore crusher and grinder.

A good working library, containing a large number of German, French and English chemical journals, is also accessible.

### Subjects.

I. General Chemistry.—*Two recitation and one and one-half laboratory credits per week, first term. Required of Freshmen in all courses.* Assistant Professor Smith.

II. General Chemistry and Qualitative Analysis.—*Three recitation and one and one-half laboratory credits per week, second term. Required of Freshmen in all courses.* Dr. Leighton.

III. Qualitative Analysis.—Basic and acid analysis; analysis of salts, industrial and natural products. *Three laboratory credits per week, first term. Required of Sophomores in Mechanical, Electrical and Civil Engineering.* Dr. Leighton.

III a. Qualitative Analysis.—Basic and acid analysis; analysis of salts, industrial and natural products. *Three laboratory and one recitation credits per week, second term. Required of Sophomores in Chemical Engineering, Home Economics and Applied Science.* Dr. Leighton.

IV. Organic Chemistry.—*Three recitation credits and one laboratory credit per week, first term. Required of Sophomores in Chemical Engineering, Home Economics, Agriculture, and Applied Science. Elective for others who have completed Chemistry III.* Assistant Professor Smith.

V. Organic Chemistry (advanced).—To be given alternate years. Given next in 1913. *Three recitation credits and one laboratory credit per week, first term. Required in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry IV.* Dr. Leighton.

VI. Organic Chemical Laboratory.—*Three laboratory credits per week, second term. Required of Juniors in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry IV.* Assistant Professor Smith.

VII. Quantitative Analysis.—Gravimetric and volumetric analysis. Analysis of minerals, ores, alloys, and industrial products. *Three laboratory credits per week, first term. Required of Juniors in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry III.* Assistant Professor Smith.

VIII. Quantitative Analysis.—*Four and one-half laboratory credits per week, second term, Junior year, and three laboratory credits per week, first term, Senior year. Required of students in Chemical Engineering, both terms. Required of students who take the Chemical Option in Applied Science, second term, Junior year. Elective for those who have completed Chemistry III.* Assistant Professor Smith.

X. Quantitative Analysis.—Food Analysis. *Four laboratory credits, first term. Required of Seniors in Home Economics. Elective for others who have completed Chemistry IV.* Assistant Professor Smith.

XI. Determinative Mineralogy.—*One and one-half laboratory credits per week, second term. Required of Juniors in Chemical Engineering and of Juniors who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry III.* Assistant Professor Smith.

XII. Physical Chemistry.—*To be given alternate years. Given next in 1914. Three recitation credits and one laboratory credit per week, first term. Required in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry III.* Dr. Leighton.

XIII. Metallurgy.—*Two recitation credits per week, second term. Required of Seniors in Chemical Engineering. Elective for others who have completed Chemistry II.* Assistant Professor Smith.

XIV. Agricultural Chemistry.—*Three recitation credits and one laboratory credit per week, second term. Required of Sophomores in Agriculture. Prerequisite: Chemistry I-IV.* Dr. Hartwell.

XV. Gas Analysis.—See Mechanical Engineering XV.

XVI. Industrial Chemistry.—*Four recitation credits per week, second term. Required of Juniors in Chemical Engineering and of Seniors who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry IV.* Assistant Professor Smith.

XVII. Industrial Chemistry.—*The work under this subject may be varied to suit the needs of individual students; including such subjects as technical analysis and textile coloring. Three laboratory credits per week, second term. Required of Seniors in Chemical Engineering and of Seniors who take the Chemical Option in Applied Science. Elective for those who take Chemistry XVI.* Dr. Leighton.

XVIII. Assaying.—*Two laboratory credits per week, second term. Required of Seniors in Chemical Engineering.* Assistant Professor Smith.

XIX. Physiological Chemistry.—*Four credits per week, second term. Required of Juniors in Home Economics.* Dr. Leighton.

XX. Assigned Work.—*Three credits per week, throughout the year. Required of Seniors in Chemical Engineering and Seniors who take the Chemical Option in Applied Science.* Dr. Leighton.

XXI. Reports and Discussion of Chemical Subjects and Recent Investigations.—*One credit per week, throughout the year; required of Juniors and Seniors in Chemical Engineering; and of Juniors and Seniors taking the Chemical Option in Applied Science.* Dr. Leighton.

XXII. Electro-Chemistry.—*Three credits per week, second term. Required of Seniors in Chemical Engineering and of Seniors who take the Chemical Option in Applied Science. Dr. Leighton.*

A. Chemistry of Plant and Animal Life.—*Three recitation credits and one laboratory credit per week, throughout the year. Required of Short-Course students in Agriculture and Domestic Science, second year. Assistant Professor Smith.*

## Freehand Drawing.

MISS ELDRED.

The aim of the subjects described below is to supply the practice in drawing necessary for subsequent work in the science laboratories, to give an elementary knowledge of the history of art, and to develop some appreciation of the beautiful in art and nature. For the first term, the work comprises outline drawing in pencil mainly from plant and animal forms. The work of the second term includes some consideration of perspective and of the principles of design. In the first term of the Sophomore year the home economics students consider the subject of color,—the principles of color harmony, and the use of color in design and decoration. The object of this work is to develop appreciation of color and to enable the student to exercise a more intelligent and sensitive discrimination in its use. In the Junior year, special work is arranged for the first term to accompany and illustrate the home economics course, treating of the arrangement and decoration of the house. The brief course in the history of art aims to give some familiarity with the greatest achievements of past and present in architecture, sculpture, and painting. The department has a considerable equipment of illustrative material for this work, including a collection of about one hundred and fifty casts and over three hundred photographs of folio or larger size, with many smaller prints, among them two thousand University Prints, illustrating Greek and Roman sculpture, and the art of Italy, Germany, and the Netherlands.

## Subjects.

II. Pencil Drawing from Objects.—*One laboratory credit per week, first term. Required of Freshmen in Agriculture. One laboratory credit per week, throughout the year. Required of Freshmen in Applied Science and Home Economics. Five laboratory credits per week, first term. Elective for Freshmen.*



III. History of Art.—*Two recitation credits per week, second term. Required of Juniors in Home Economics. Two recitation credits per week, first term. Required of Seniors in Home Economics.*

IV. Color Problems.—*One laboratory credit per week, first term. Required of Sophomores in Home Economics.*

V. Drawing in Charcoal from Still Life and the Cast.—*Two laboratory credits per week, second term. Elective.*

VI. Pen-and-ink Drawing, Water-Color, or Pastel.—*Two laboratory credits per week, second term. Elective.*

VII. Modeling.—*Two laboratory credits per week, second term. Elective.*

VIII. Work Illustrating Home Economics VII.—*One laboratory credit per week second term. Required of Juniors in Home Economics.*

IX. History of American Art.—*One recitation credit per week, second term. Elective.*

X. Modern European Art.—*One or two recitation credits per week, second term. Elective.*

## Economic and Social Science.

PRESIDENT EDWARDS.

### Subjects.

I. Political Economy.—Text-book, supplemented by lectures, reading, and essays. *Four recitation credits per week, first term, first twelve weeks. Required of Seniors in all courses.*

II. Agricultural Economics.—The study of agriculture as an industry, from the point of view of political economy. Includes a study of the agricultural market; transportation of agricultural products; agricultural labor; farm ownership and tenancy; mortgages, etc. *Elective.*

III. Rural Sociology.—Movements of the farm population—causes and results; general social conditions of farmers, such as illiteracy, health, crime, etc.; personal and social traits developed by rural life; means of communication in rural communities; the rural school; agricultural education; the country church; farmers' organizations; federation of rural social forces. *Elective.*

## Home Economics.

PROFESSOR LANDES.

The aim of this department is to give both theoretical and practical training in the economic administration of the home. The laboratory is situated in a building by itself, which is finished and furnished



in such a manner as to demonstrate the sanitary principles involved in proper kitchen arrangements. It is amply equipped with the most recent scientific cooking-apparatus, inclusive of thermometers, metric scales, different kinds of stoves, and individual utensils. The work in chemistry, biology, etc., is, however, carried on in the laboratories of those departments. There is a good home economics library, and students are expected to make intelligent use of the main library in reference work, as well as to study those bulletins of the Department of Agriculture and such state reports as deal particularly with the subjects of food and nutrition.

### Subjects.

I. Domestic Art.—A course in hand sewing; different kinds and combinations of stitches; drafting and cutting of patterns; machine practice; study of charts and tailoring systems; making of two undergarments and an unlined dress. *One laboratory credit per week, first term; and two laboratory credits per week, second term. Required of Freshmen in Home Economics.*

II. Elementary Cookery.—The economic use of fuels; the management of stoves and ranges; the study of cooking temperatures and processes; the care of utensils; practice in the cookery of a few typical foods. *One recitation and one laboratory credit per week, second term. Required of Freshmen in Home Economics.*

III. a. Personal Hygiene.—This course considers the aim of personal hygiene as the maintaining of the most efficient human machine for the life needs of the individual. It endeavors to give and establish ideals of health and efficiency. *One recitation credit per week, first term. Required of all women Freshmen.*

III. b. Euthenics.—The following topics are considered: environment of human life; problems of adaptation to modern conditions and progress; personal aim; individual responsibility; factors in human efficiency. *One recitation credit per week, second term. Required of all women Freshmen.*

IV. Foods.—A systematic study is made of the food constituents, their sources, chemical composition, properties, nutritive and economic values. This course is accompanied by laboratory practice in the preparation of many representative foods. Class demonstrations are given from time to time. *Three recitation and one and one-half laboratory credits per week, first term; two recitation and one and one-half laboratory credits per week, second term. Required of Sophomores in Home Economics. Prerequisites: Chemistry I, II, Home Economics II.*

V. Household Methods and Management.—Lectures and discussions upon general housework, the principles of laundering, marketing, apportionment of income, maintenance of standards, household administration, social, legal, industrial, and educational problems of the family. *Two recitation credits per week, first term. Required of Sophomores in Home Economics.*

VI. Human Nutrition.—Composition of the animal body and its daily food requirements; methods of investigation employed in studying the nutritive function of foods; the changes affected by cooking and by the processes of digestion; balancing of dietaries; food economy. *Three recitation credits per week, first term. Required of Juniors in Home Economics. Prerequisite: Chemistry IV, Zoölogy III, Home Economics II, IV.*

VII. Home Decoration.—A study of the evolution of the house; its adaptation to modern conditions; the principles to be followed in planning, furnishing, and decorating the house from a sanitary and artistic standpoint. *Two recitation credits per week, first term. Required of Juniors in Home Economics.*

VIII. Dietetics.—Problems in nutritive ratios; the balanced dietary; hygienic combinations of foods; construction of menus; adaptation of the diet to age, occupation, and different climatic conditions. *One recitation and one laboratory credit per week, second term. Required of Juniors in Home Economics. Prerequisite: Home Economics VI.*

IX. Sanitation.—This course deals with household and public hygiene. Study of health and the causes of disease; vital resistance; susceptibility and immunity; infection and contagion; pollution of food and water supplies; prevention and inhibition of infection, decomposition and decay. *Two recitation credits per week, second term. Required of Juniors in Home Economics.*

X. Food Preservation.—Study of the processes of decomposition, fermentation, and putrefaction; practice in preserving foods by drying, salting, and sterilization; preparation of jelly, pickles, and canned fruits; discussion of commercial preservatives. *One laboratory credit per week, first term. Required of Seniors in Home Economics. Prerequisite: Home Economics IX.*

XI. Hygiene and Care of Children.—A study of the physical development of children; care of infants and young children; school hygiene. *Two recitation credits per week, first term. Required of Seniors in Home Economics. Prerequisite: General Psychology. Open to Juniors and Seniors in other courses.*

XII. Home Nursing.—Care of the sickroom and patient; administration of medicines; recording of symptoms; accidents and emergencies; hygiene of infectious diseases; antiseptics and disinfectants. *Two recitation credits per week, second term. Required of Seniors in Home Economics. Prerequisite: Home Economics IX.*

XIII. Therapeutic Cookery.—This course includes the study of abnormal conditions of digestion and metabolism, relation of food to specific diseases, cookery for the sick and convalescent. *One recitation and one laboratory credit per week, second term. Required of Seniors in Home Economics. Prerequisite: Home Economics IV, VI, VIII, X.*

XIV. Assigned Work.—This may be a problem in the biological, chemical, physiological, or economic aspect of the work in Home Economics. *Three recitation and two laboratory credits per week, second term. Required of Seniors in Home Economics.*

XV. Teaching of Home Economics.—Purpose and method of the work; courses of study, equipment, etc. *One recitation credit per week, second term. Elective for Seniors in Home Economics.*

XVI. History of Home Economics.—Development of home economics movement; a study of the work as presented in different types of institutions, and its industrial, educational, and sociologic aspects. *One recitation credit per week, first term. Elective.*

XVII. Textiles.—A study of fabrics; processes and appliances studied with reference to their historic development; primitive industries; modern processes of manufacture; dyeing, spinning, and weaving. *Two recitation credits per week, second term. Elective. Prerequisite: History I, Home Economics I.*

XVIII. Dressmaking and Tailoring.—*Three laboratory credits per week, second term. Elective for students who have completed Home Economics I.*

XIX. Food Products.—Production, manufacture, and marketing of foods; factors affecting cost. *Two recitation credits per week, first term. Elective.*

XX. A Study of the Family.—Development of the domestic institutions; social ethics of the family; legal, industrial, and educational problems of the household. *Two recitation credits per week, second term. Prerequisite: Home Economics V. Elective.*

## DOMESTIC SCIENCE.

A. Household Technique.—This course is planned to give a knowledge of the processes involved in household work. It deals with the handwork of cooking and cleaning; care of rooms, table setting and serving, etc. *Two recitation credits per week, first term, first year. Required of Short-Course students in Domestic Science.*

B. Sewing.—Hand sewing; use of machine; drafting of patterns. *One laboratory credit, first term, first year. Required of Short-Course students in Domestic Science.*

C. a. Food.—Introductory work in the study of food. Practice deals with the preparation of simple and economic dishes. *One laboratory credit, first term, first year. Required of Short Course students in Domestic Science.*

C. Food.—Study of the five food principles and their nutritive and physiological functions; practice in the cookery of vegetables, cereals, fruits, milk, eggs, and meats. *Three recitation and one and one-half laboratory credits per week, second term, first year. Required of Short-Course Students in Domestic Science.*

D. Dietetics.—Provides instruction in advanced cooking; special cooking for sick and convalescent; planning of meals; discussion of dietaries. *Three recitation and one and one-half laboratory credits per week, first term, second year. Required of Short-Course students in Domestic Science.*

E. Management of the House.—Considers the materials, qualities, amounts, and cost of house furnishing and supplies; lessons in marketing. *One recitation*

*credit per week, second term, second year. Required of Short-Course students in Domestic Science.*

F. Hygiene.—Study of the living machine, its mechanism and functions; the right use and proper care of the human mechanism; home nursing and emergencies. *One recitation credit per week, second term, second year. Required of Short-Course students in Domestic Science.*

G. Textiles.—Study of the clothing fabrics; dressmaking. *One and one-half laboratory credits per week, second term, second year. Required of Short-Course students in Domestic Science.*

## Psychology and Education.

PROFESSOR BOARDMAN.

The subjects in education provide instruction in the theory of the subject as derived from general and educational psychology, and in the history of education. As a part of the work visits are made to neighboring elementary and secondary schools for the purpose of observing the technique of the recitation with special reference to the courses in science.

### Subjects.

I. History of Education.—Study of educational theory and practice from the historical point of view, with reference to modern scientific and industrial education. *Three recitation credits per week, first term. Required of Seniors in Applied Science and Home Economics.*

II. Psychological Principles of Education.—Study of the principles and methods of teaching. *One recitation credit per week, first term. Required of Seniors in Applied Science and Home Economics.*

III. Secondary Education.—Principles of teaching, with special reference to the aims of the secondary schools, organization, management, and method in the high school. *Three recitation credits per week, second term. Required of Seniors in Applied Science and Home Economics.*

IV. General Psychology.—Structure and functions of mental life; simple experiments. *Three recitation credits per week, first term. Required of Juniors in Applied Science and Home Economics.*

VIII. How to Study.—A practical course, based on psychological principles, designed to increase the efficiency of students. *One recitation credit per week, first nine weeks of the first term. Required of all Freshmen.*



## Mechanical Engineering.

PROFESSOR WALES, MR. ELDRED, MR. BEAMENS DERFER,  
MR. GREENOUGH.

It is the object of the work in the department of mechanical engineering to turn out broad-gauged, self-dependent men, well trained in engineering theory, familiar with the practical matters of construction and operation, and having some knowledge of the economic relations which the engineer and industrial development bear to modern society. In the endeavor to train men who will touch life, not at one point, but at many, the work of the department is supplemented and rounded out by extended and vigorous courses along the lines of electrical engineering, physics, mathematics, chemistry, English, history, modern languages, and political economy. The special work of the department of mechanical engineering divides itself naturally into the following general groups: shop practice, design, steam engineering, and experimental engineering. Each of the above groups is amplified and briefly described below:

### SHOP PRACTICE.

The object of this work is to give familiarity with principles, operations, possibilities, and management, rather than to develop the greatest dexterity in manipulation. Shop practice extends over three years of the course, and comprises forging and foundry work, pattern making, and machine-tool operation. The shops are exceptionally well equipped with machines and tools of all kinds. In the machine shop are six metal lathes, speed lathes, planes, 16-in. shaper, two drills, two tool grinders, drill grinder, milling machine, punching-press, vertical boring and turning mill, together with the usual assortment of tools and auxiliaries. The pattern shop is provided with lathes, circular saw, band saw, jig saw, dowel machine, surface and buzz planers, etc. Fifteen work-benches fully provided with the small tools of the pattern maker complete the equipment. The forge shop is equipped with the usual anvils, forges, fullers, swages, hardies, etc., while a full stock of patterns, shovels, riddles, flasks, and trowels is provided for the work in foundry practice. Enthusiasm is given to the work by the construction of things of real value—a new machine for the shop or a piece of apparatus for the



laboratory—instead of spending the whole time on worthless “exercises.”

### DESIGN.

The work along the lines of design extends throughout the four years, beginning with freehand and mechanical drawing and ending with machine design and power-plant design in the Senior year. Leading up to this final work are the terms of mechanical drawing, descriptive geometry, mechanism, valve gears, dynamics of machines, mechanics, strength of materials, hydraulics, and thermo-dynamics. All the forces of correct theory and the practice of the most successful builders are brought to bear upon the solution of definite, practical problems.

### STEAM ENGINEERING.

Steam engineering begins in the Junior year and runs through the remainder of the course. A rigorous study of the mathematical theory of thermo-dynamics supplies the foundation for the study of boilers and engines, design and economy, and the various devices and auxiliaries of the power plant. In the Senior year is considered the particular branch of heating and ventilating. In this year, also, the subject of power plants is taken up, which applies all the previous training in steam engineering, and which brings together and unifies all allied subjects.

### EXPERIMENTAL ENGINEERING.

This subject, which extends throughout the Junior and Senior years, is intended to fix the theory developed in all the other lines of work. Instruction is given by means of lectures and laboratory tests. The student becomes familiar with the theory, construction, use, and calibration of the instruments and apparatus used by the engineer, and gains experience in making accurate standard and special tests. The work is divided into four groups: one dealing with the chemical problems of engineering—testing of gases, oils, fuels, feed water, etc.; a second, with general calibration and testing; a third, with the study and tests of structural materials; and the fourth, with general power-plant testing. In power-plant testing the students make the necessary plans and preparations, perform the experimental work, and prepare formal reports, with recommendations for improvement in economy, etc. These tests are made not

only on the college power-plants, but on those of manufacturing establishments of the state. The equipment for experimental work comprises several boilers and steam engines, large steam pump, gas engines, feed-water heaters, several steam and gas engine indicators, steam calorimeters, tanks, scales, injectors, water turbine, hydraulic ram, pulsometer, centrifugal pump, belt pump, weirs, two-stage air compressor, air-brake outfit, meters, gauges, 50,000-lb. tension and compression machine, apparatus for oil and gas testing, fuel calorimeter, complete outfit for testing cements and concretes, etc. Throughout the work the greatest stress is laid upon the correct calculation and interpretation of results, and accuracy and self-dependence are developed to the fullest.

### Subjects.

I. Mechanical Drawing.—Lettering, freehand sketching, use of drafting tools, geometrical problems, projections, machine parts. *Three laboratory credits per week, first term; two laboratory credits per week, second term. Required of Freshmen in Engineering. One and one-half laboratory credits per week, first term. Required of Juniors in Home Economics.* Mr. Greenough.

II. Forge and Foundry.—Forging, drawing, bending, welding, etc. Principles of moulding, core making, and casting. *Three laboratory credits per week, first term. Required of Freshmen in Engineering.* Mr. Eldred.

III. Pattern Making.—Use of tools, bench and lathe work, pattern making. *Three laboratory credits per week, second term. Required of Freshmen in Engineering.* Mr. Eldred.

IV. Graphic Statics.—Force and funicula polygons with applications in the determination of stresses in framed structures. *Two recitation credits per week, second term. Required of all Sophomores in Engineering.* Mr. Beamensderfer.

V. Descriptive Geometry.—Elementary principles; problems relating to the point, line, plane, cylinder and double curved surfaces of revolution, intersections, and developments. *One recitation and two laboratory credits per week, first term. Required of all Sophomores in Engineering.* Mr. Beamensderfer.

VI. Mechanical Drawing.—Detail and assembly drawings, elementary machine design. *Three laboratory credits per week, second term. Required of Sophomores in Mechanical, Electrical, and Civil Engineering.* Mr. Beamensderfer.

VII. Machine Shop.—Hand work in chipping and filing, use of machine tools, construction of machines. *Three laboratory credits per week, second term. Required of Sophomores in Electrical Engineering. One and one half laboratory credits per week, second term. Required of Sophomores in Civil Engineering.* Mr. Eldred.

VIII. Machine Drafting.—Technique of machine drafting, application of kinematics to the design of gears, valves, linkages, quick-return motions, etc. *Three laboratory credits per week, first term. Required of Juniors in Mechanical Engineering.* Mr. Beamensderfer.

IX. Heat Engineering—Thermo-dynamics.—Mathematical development and discussion of the laws of thermo-dynamics, and their application to perfect gases, saturated and superheated steam. Theory of air compressors, pneumatic machinery, hot-air engines, gas engines, and refrigerating machines. Boilers, engines, engine economy, effect of cylinder walls, compounding, superheating, use of jackets, varying cut-off, speed, pressure, etc. Flow of fluids, injectors, and thermo-dynamic principles applied to the steam turbine. *Three recitation credits per week, throughout the year. Required of Juniors in Mechanical and Electrical Engineering; and for twenty-seven weeks, of Juniors in Chemical Engineering.* Professor Wales.

X. Applied Mechanics.—Forces, composition and resolution, parallel forces, moments, couples, centres of gravity, velocity, acceleration, energy and momentum, falling bodies and projectiles, centrifugal force, moment of inertia, radius of gyration, angular momentum, energy of rotating bodies, impact, etc. Strength of materials, stresses in structures, riveted joints, beam theory, struts, columns, shafting, springs, etc. Solution of practical problems. Text, Lanza's Applied Mechanics. *Five recitation credits per week for twenty-four weeks. Required of Juniors in Mechanical, Electrical, and Civil Engineering, and of Juniors in Chemical Engineering for the first term.* Professor Wales.

XI. Hydraulics.—General principles, head and pressure, center of pressure, velocity of discharge, flow through orifices and over weirs, Bernouilli's theorem, flow through pipes, flow through conduits and canals, energy of flow, horse-power, hydraulic machinery, rams, turbines, centrifugal pumps, and Pelton wheels. Merriman's Treatise on Hydraulics. *Five recitation credits per week, for last twelve weeks of second term. Required of Juniors in Mechanical, Electrical, and Civil Engineering.* Professor Wales.

XII. Mechanism.—Instantaneous centers, centroids, lobed wheels, belts, pulleys, four-bar linkages, graphical determination of velocity ratios, quick-return motions, straight-line motions, pantographs, trains of gears, epicyclic trains, tooth gearing, epicycloidal and involute teeth, bevel wheels, etc. Schwamb and Merrill's Mechanism. *Three recitation credits per week, second term. Required of Sophomores in Mechanical and in Chemical Engineering.* Mr. Beamensderfer.

XIII. Valve Gears and Dynamics.—Plane slide valves, piston valves, riding cut-off valves; Joy and Marshall gears; Stephenson, Gooch, and Walschart link motions; drop cut-off valves; Corliss, Brown, and Putnam valves. Peabody's Valve Gears. Lectures and references. *Three recitation credits per week, second term. Required of Juniors in Mechanical Engineering.* Mr. Beamensderfer.

XIV. Machine Shop.—Advanced work in machine construction. *Three laboratory credits per week, throughout the year. Required of Juniors in Mechanical Engineering.* Mr. Eldred.

XV. Experimental Engineering a.—Lectures and laboratory work in gases, oils, and fuels; flue-gas analysis, calculation of air per pound of coal, loss due to excess air and to imperfect combustion; analysis of fuel gases and calculation of heating values; determination of heating values by the Junkers and Parr calorimeters; study of gases in producer and gas-engine work. Analysis of coal and other fuels. Analysis and testing of lubricating and fuel oils. Testing of boiler waters. *Two laboratory credits, first term. Required of Juniors in Mechanical and Electrical Engineering, and Seniors in Chemical Engineering.* Professor Wales.

XVI. Experimental Engineering b.—General calibration and testing of engineering instruments and apparatus; gauges; planimeter; manometers; indicators; Prony brakes; scales; valve setting by measurement and by the indicator; Carpenter calorimeter; Peabody calorimeter; flow through orifices; weirs; nozzles; Pitot tube; meters; Venturi meters; hydraulic ram; turbine, etc. *Two laboratory credits per week, second term. Required of Juniors in Mechanical, Electrical and Civil Engineering.* Mr. Beamensderfer.

XVII. Experimental Engineering c.—Properties of materials. Lectures on the metallurgy of iron and steel; effects of impurities; cold-working; repeated stresses; tensile, compressive, and shearing strengths; ductility; resilience, etc.; copper, brass, bronze, and other alloys; timber, stone, and brick. The manufacture of natural and Portland cements; effects of over-and under-burning, overliming,  $\text{SO}_3$ , etc.; discussion of tests and their interpretation. Laboratory work is parallel with lectures. Tensile strengths of cast-iron, wrought-iron, and steel; compressive strength of metals, timber, concrete, cement; shearing tests of metals; transverse tests of timber and iron; stress-strain diagram, elastic limit, yield point, modulus of rupture; tensile tests of cement; pat tests, boiling tests; specific gravity; fineness; time of set, etc. Determination of the best proportions of cement, sand, and rock of given characteristics. *Two lecture and two laboratory credits per week, first term. Required of Seniors in Mechanical, Electrical, and Civil Engineering.* Professor Wales and Mr. Beamensderfer.

XVIII. Experimental Engineering d.—Hot-air engine, gas engine, steam pump, injectors, transmission dynamometers; boiler tests; complete tests of power plants; outside work on the H. P. of a stream, with tests of hydraulic power plant; outside tests of manufacturing plants, with calculations, reports, and recommendations. *Two laboratory credits per week, second term. Required of Seniors in Mechanical and Civil Engineering.* Professor Wales.

XIX. Heating and Ventilation.—Discussion of the principles and practice of the various systems of heating and ventilating—direct and indirect, hot-air, hot-water, pressure steam, exhaust steam, vacuum systems, fans, blowers; calculation of ventilation and radiation; flues, pipes, and radiators; air troubles; central heating systems with central power plants; design of heating system for a given building. *One recitation credit per week, second term. Required of Seniors in Mechanical Engineering.* Professor Wales.

XX. Machine Design.—Design of machine parts from considerations of the motions involved, strength, rigidity, and friction; design of a complete machine;



calculations with design of some type of engine, starting with given requirement of H. P., speed, etc., and with an assumed theoretical indicator card. *Three laboratory credits per week throughout the year. Required of Seniors in Mechanical Engineering.* Mr. Beamensderfer.

XXI. Power Plants and Power-Plant Design.—Study of the various types—as to choice, location, installation, and operation; prime movers, their accessories and auxiliaries.

Steam Plants.—Study of the effects on economy, range, and reliability of simple or compound, condensing or non-condensing engines with various valve gears, throttling and cut-off governors, different boiler installations, feed-water heaters, economizers, pressure regulators, pumps, injectors, mechanical stokers, forced and induced draft, chimneys, etc.; calculations of proper sizes, powers, and strengths of machines and apparatus of the power plant; methods of improving economy. The place of the steam turbine in power-plant work.

Hydro Plants.—Discussion of the types of hydraulic machinery, their efficiency, and the particular conditions to which each is best adapted. This will be a development of the previous work in hydraulics to meet the need of the power engineer.

Gas-Producer Plants.—The different suction and pressure producers, theory, capacity, future, etc.; gas engines, from both the thermo-dynamic and the mechanical points of view. *Two lecture credits and one laboratory credit per week, first term. Required of Seniors in Mechanical Engineering. Two lecture credits per week, first term. Required of Seniors in Electrical Engineering.* Professor Wales.

XXII. Assigned Work.—This may be of the nature of research or of specialized study along some particular line of engineering. Options are offered in theory of elasticity, advanced hydraulics, etc. *Three credits per week, throughout the year. Required of Seniors in Mechanical Engineering.*

XXIII. Dynamics of Machines.—Analysis of stresses, effects of inertia, balance, reciprocating parts, flywheels, design of high-speed engines and machinery. *Two recitation credits per week, second term. Required of Seniors in Mechanical Engineering.* Professor Wales.

XXIV. Works Management.—The economics of the shop and factory, cost-keeping, efficiency in production. *One lecture credit per week, second term. Required of Seniors in Mechanical Engineering.* Professor Wales.

XXV. Elements of Thermo-dynamics.—A non-mathematical discussion of boilers, engines, pumps, and power apparatus for civil engineers. *Three recitation credits per week, first term. Required of Juniors in Civil Engineering.* Mr. Greenough.

## Electrical Engineering.

PROFESSOR DICKINSON, ASSISTANT PROFESSOR CLOKE.

The aim of the course in electrical engineering is to give the student such training in the fundamental principles of the subject as will fit



him to take up, in an intelligent and effective manner, any line of engineering work requiring special electrical knowledge. Instruction is given in both classroom and laboratory, the aim of each method of instruction being to supplement the other, and to develop resourcefulness and the habit of independent thought on the part of the student.

### Subjects.

I. Theory of Direct Currents.—A detailed study of the theory of direct-current apparatus. The theory of dynamos, motors, and auxiliary apparatus. *Three recitation credits per week, first term. Required of Juniors in Electrical Engineering and of Seniors in Chemical and Mechanical Engineering.* Assistant Professor Cloke.

II. Direct-Current Laboratory.—A course following Physics V, and consisting of tests of various types of direct-current apparatus. These include magnetization and characteristic curves of different types of machines, as well as tests for efficiency, regulation, temperature rise, and tests of a similar nature. *Three laboratory credits per week, second term. Required of Juniors in Electrical Engineering and of Seniors in Mechanical Engineering.* Assistant Professor Cloke.

III. Electrical Measurements.—A course designed to familiarize the student with physical and electrical units, fundamental and derived; the electrical standards of E. M. F., current, and resistance; and with the methods employed in the simpler electrical measurements. *One recitation credit per week for last nine weeks, second term. Required of Sophomores in Electrical Engineering.* Professor Dickinson.

IV. Theory of Alternating Currents.—Recitations and lectures. The elements of the theory of alternating currents and of alternating-current machinery. This course includes the simpler theories regarding the action of A. C. dynamos, motors, converters, and transformers. *Two recitation credits per week, second term. Required of Juniors in Electrical Engineering and of Seniors in Mechanical Engineering.* Professor Dickinson.

V. Theory of Alternating Currents.—Recitations and lectures, continuing subject IV. The more advanced theories regarding the effect of inductance and capacity in A. C. circuits, and of the action of A. C. machinery, are discussed. Assigned readings and reports are a feature of the subject. *Three recitation credits per week, throughout the year. Required of Seniors in Electrical Engineering.* Professor Dickinson.

VI. Alternating-Current Laboratory.—A course consisting of tests of different types of alternating-current apparatus, such as single and polyphase generators and motors, induction motors, converters, and transformers. *Three laboratory credits per week, throughout the year. Required of Seniors in Electrical Engineering.* Professor Dickinson.

VII. Design of Electrical Machinery.—General principles of the design of electrical apparatus, including a direct and an alternating current generator. *Three laboratory credits per week, second term. Required of Seniors in Electrical Engineering.* Professor Dickinson.

VIII. Telephone Engineering.—A consideration of the development of the modern telephone, with special reference to the common battery systems. *One recitation credit per week, first term. Required of Seniors in Electrical Engineering.* Professor Dickinson.

X. Transmission of Energy.—A study of systems of high-tension distribution, the effect of capacity and inductance, the construction of lines, their protection, and the troubles developing in high-tension work. *Two recitation credits per week, first term. Required of Seniors in Electrical Engineering.* Professor Dickinson.

XI. Electric Railway Engineering.—A discussion of the economic considerations in the development of an electric railway, methods of construction, the location of the generating station, the design of the distributing system, types of motors, and systems of control. *Two recitation credits per week, second term. Required of Seniors in Electrical Engineering.* Assistant Professor Cloke.

XII. Assigned Work.—Thesis work is assigned to those Seniors possessing special aptitude for original research. Other students are assigned special work in the laboratories of the department. *Three laboratory credits per week, throughout the year.* Professor Dickinson.

## Civil Engineering.

PROFESSOR WEBSTER, MR. BILLS.

It is the purpose of this course to give the student such training in the fundamental principles of engineering as to prepare him for the duties and opportunities that may be offered in the various fields of civil engineering. With this object in view, application of the theories and principles learned in the classroom is made in the field, laboratory, and drafting room. An effort is also made to give the student as liberal a training in the sciences and arts as his limited time will permit, but the primary purpose is to prepare him for one definite line of work.

In order to widen the scope of the student's opportunities, the name of the department has been changed from Highway Engineering to Civil Engineering, and corresponding changes have been made in the course of study. However, owing to the growing importance of highway engineering in this state and throughout the country in general, considerable emphasis is still placed on this phase of

engineering work. The state appropriates annually a sum of money, which is expended under the direction of the instructor and students of the department, in the construction and maintenance of roads on the college property. In this way practical experience is obtained in highway engineering.

The equipment of the department consists of levels, transits, compasses, rods, tapes, chains, drafting instruments, etc., and testing machines, to which the student has access. He also has free use of the library, in which are found the leading engineering journals, and many of the principal works on various engineering subjects.

### Subjects.

I. Surveying.—Instruction is given by means of recitations, field and laboratory work, in the theory, use, and adjustments of the compass, level, and transit. The field work includes the prolongation of straight lines, determination of distances, angles, areas, boundaries, corners, and exercises in leveling, etc. Maps are made from the field notes. *One recitation and two field credits per week, first term. Required of Sophomores in Mechanical, Electrical, and Civil Engineering.*

II. Topographic Surveying.—A study is made of the theory and use of the plane table, and of the transit and stadia in making topographic surveys. A complete topographic survey based on a system of triangulation is made, including the completion of a map. *One recitation and two field credits per week, second term. Required of Sophomores in Civil Engineering.*

III a. Railroad Engineering.—The work consists of a reconnaissance, a preliminary and a location survey of a short line of railroad, for the purpose of giving the student sufficient work to familiarize him with the methods in actual practice. A set of notes is kept by each student, from which a map, a profile, and estimates are made. A study is also made of the properties of curves, switches, frogs, turnouts, and the spiral, and the methods of locating these in the field. *Five credits per week, divided between field and recitation as seems advisable, first term. Required of Juniors in Civil Engineering.*

III b. Railroad Engineering.—The principles of economic railroad construction and maintenance; railway appliances, ballast, and roadbed, culverts and trestles, turnouts, sidings, yards, terminals, signaling, locomotive and grade problems, betterment surveys, etc. *Three recitation credits per week, second term. Required of Juniors in Civil Engineering.*

IV. Graphic Statics.—Instruction is given in graphic statics and its application in the design of simple framed structures. *Two recitation credits per week, first term. Required of Juniors in Civil Engineering.*

V. Roads and Pavements.—The theoretical work of this course consists of a discussion of the principles and details involved in the location, construction and

maintenance of earth, gravel, and macadam roads, together with a discussion of the methods of construction, durability, maintenance, and assessment of cost of the various kinds of pavements used on city streets. The field work consists in the construction of a gravel or macadam road on the college grounds. *Three recitation credits and one field credit per week, second term. Required of Juniors in Civil Engineering.*

VI. Bridge Details.—The work in this course consists in making a tracing of a shop drawing, estimating the weight and determining the efficiency of the various members of a highway bridge. *Two laboratory credits per week, first term. Required of Seniors in Civil Engineering.*

VII. Bridge Analysis.—Instruction is given in the computation of stresses in the various types of bridges by graphical and algebraic methods under different conditions of loading. *Two recitation credits per week, first term. Required of Seniors in Civil Engineering.*

VIII. Bridge Design.—The student designs a plate girder and a bridge, makes the shop details, and a set of working drawings. *Three laboratory credits per week, second term. Required of Seniors in Civil Engineering.*

IX. Masonry Construction.—This course deals with the materials of masonry, including brick, stone, lime, and cement; the theory of masonry structures, including foundations for buildings, bridges, and piers; the construction of retaining walls, culverts, bridge abutments; masonry dams and arches. The student is directed to important articles in the current literature of the subject, and a systematic and thorough laboratory course on cement testing is given. *Two recitation credits and one laboratory credit per week, first term. Required of Seniors in Civil Engineering.*

X. Reinforced Concrete.—A study is made of the principles of mechanics underlying the design of reinforced concrete. Working stresses and economical proportions are considered, also the application of reinforced concrete construction to building construction, arches, retaining walls, dams, and miscellaneous structures. *Two recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XI. Sewerage.—A discussion of the separate and combined systems of sewers; relation of rainfall to storm-water flow; hydraulics of sewers; removal of house sewage; the design and construction of sewers and method of sewage disposal. *Two recitation credits per week, first term. Required of Seniors in Civil Engineering.*

XII. Water Supply.—A discussion of the quantity of water required, sources of supply, flow of streams, and of ground water. Instruction is also given in the general arrangement of waterworks, loss of head in flow of water through pipes, stresses in dams and water towers. Works for the purification and distribution of water are discussed, including reservoirs, settling basins, pumping machinery, etc. *Three recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XIII. Tunneling.—A study of the methods of making tunnel surveys and of the modern methods employed in tunnel construction. *One recitation credit per week, second term. Required of Seniors in Civil Engineering.*



XIV. Contracts and Specifications.—A study of the fundamental principles of the law of contracts, and their application to engineering work. *Two recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XV. Assigned Work.—With the advice and consent of the head of the department, the student elects three hours' work in the Senior year. This may be research, thesis, or recitation and laboratory work, depending upon the qualifications of the student. *Three credits per week, throughout the year. Required of Seniors in Civil Engineering.*

XVI. Vacation Reading.—Systematic reading during vacations on some topic assigned by the head of this department.

XVII. Metal Structures.—The graphical determination of stresses in steel mill buildings. *One laboratory credit per week, second term. Elective for Seniors in Civil Engineering.*

XVIII. Irrigation Engineering.—This includes a study of the impounding, diverting, flow, and measurement of water, quantity required, canals, canal works, storage reservoirs, waterways, etc. *Three recitation credits per week, first term. Elective for Seniors in Civil Engineering.*

## English.

### Composition, Rhetoric, and Literature.

PROFESSOR BOARDMAN AND PROFESSOR CHURCHILL.

The English department offers subjects in literature and in rhetoric and composition, both written and oral. The required work extends over the first three years and twelve weeks of the Senior year. An elective course in literature is provided for Juniors and Seniors. Both literature and composition courses place emphasis on the practical and the contemporary phases of the work.

The library is an important factor in the work of the department, as it contains some twelve hundred volumes of representative English and American literature.

### Subjects in Literature.

PROFESSOR BOARDMAN.

IV. Modern Essays.—Study of representative essays of England and America in the 19th and 20th centuries. *Four recitation credits per week, first term. Required of Juniors in all courses.*

V. Shakspeare.—A course in appreciation, including lectures on the life of Shakspeare, reading of several plays, and careful study of three plays. *Four recitation credits per week, last twelve weeks of the second term. Required of Seniors in all courses.*



VII. The English Novel.—Study of the development and technique of the novel in England. *Two recitation credits per week, second term. Elective as an extra for Juniors and Seniors, with credit in Applied Science and Home Economics courses.*

## Rhetoric and Composition.

PROFESSOR CHURCHILL.

I. Rhetoric and Composition.—Outlines of rhetorical theory, study of models illustrating the various literary forms, exercises, weekly themes. *Three recitation credits per week, throughout the year. Required of Freshmen in all courses.*

II. Newspaper Work.—The technique of structure and style as applied to newspaper methods. Daily practice; special emphasis on editorial paragraph writing, based on the study of current events. *One recitation credit per week, first term. Required of Sophomores in all courses.*

III. Argumentation.—Theory and Practice. Training in the principles of brief-drawing; weekly practice in extemporaneous speaking and debating. *Two recitation credits per week, second term. Required of Sophomores in all courses.*

VIII. Interpretive Reading.—Training in the fundamental principles of pronunciation, articulation, emphasis, inflection, phrasing, quality, force, pitch, rhythm. Besides the ultimate practical purpose, this course is intended to give the necessary preparation for effective public speaking in the courses in debate and oratory during the Junior and Senior years. *One recitation credit per week, first term. Required of Sophomores in all courses.*

IX. Debating.—Instruction and practice in the art of debate. *One recitation credit per week, throughout the year. Required of Juniors in all courses.*

X. Oratorical Writing and Extemporaneous Speaking.—Critical study of representative English and American orations as models; weekly practice in extemporaneous speaking and in the technique of oratorical writing. Criticism on the construction of one long oration. *One recitation credit per week, throughout the year. Required of Seniors in all courses.*

A. Elementary English.—Composition, oral expression, assigned reading. *Five recitation credits per week, throughout the year. Required of Short-Course Students in Agriculture and Domestic Science, first year.*

B. Elementary English.—A continuation of A, including, also, some instruction in civics and economics. *Three recitation credits per week, throughout the year. Required of Short-Course students in Domestic Science, second year.*

## Geology and Mineralogy.

DR. LEIGHTON, ASSISTANT PROFESSOR SMITH.

GEOLOGY.—Under this subject historical geology is considered in outline, attention being given, also, to those phases of dynamical

and structural geology which are particularly important. Special attention is given to rock weathering and soil formation, and to those characteristics of rocks which are of chief importance in connection with road construction.

**DETERMINATIVE MINERALOGY.**—A short course dealing with the elements of crystallography is given, together with the physical and chemical characteristics of minerals, especially that of rock-making minerals composing our soils. Laboratory work in blowpipe analysis and physical determination of minerals follows the crystallography.

### Subjects.

I. Geology.—*Two recitation credits per week, second term. Required of Juniors in Civil Engineering and Sophomores in Agriculture.*

II. Mineralogy.—See Chemistry XI.

### History.

PRESIDENT EDWARDS, PROFESSOR CHURCHILL, MISS MYRICK.

I. Social, Economic, and Industrial History of the United States.—*Four recitation credits per week, second term. Required of Juniors in all courses.*

II. Government and Politics in the United States.—*Four recitation credits per week, first term, last six weeks; and second term, first six weeks. Required of Seniors in all courses.*

A. English History. *Three recitation credits per week, throughout the year. Required of students in Domestic Science, second year.*

### Mathematics.

PROFESSOR TYLER, MR. BILLS.

The work in this department covers two distinct phases of mathematical training: the college and the short-course instruction. Throughout the regular college work, emphasis is laid both on the theory and direct application of the different subjects to the problems of engineering and agriculture. An attempt is made to present a working knowledge of arithmetic, algebra, and bookkeeping, to short-course students.

### Subjects.

I. Higher Algebra.—*Five recitation credits per week, nine weeks, first term. Required of all Freshmen. Professor Tyler.*

II. Trigonometry.—*Five recitation credits per week, nine weeks, first term. Required of all Freshmen.* Professor Tyler.

VIII. a. Analytics.—*Five recitation credits per week, second term. Required of Freshmen in Engineering.* Professor Tyler, Mr. Bills.

VIII. b. Analysis.—*Five recitation credits per week, second term. Required of Freshmen in Applied Science.*

X. Calculus.—*Five recitation credits per week, last fourteen weeks, first term. Required of Sophomores in Engineering.* Professor Tyler.

XI. Calculus (completed).—*Five recitation credits per week, second term. Required of Sophomores in Engineering.* Professor Tyler.

XII. University Algebra.—*Three recitation credits per week, first term. Elective for Freshmen.*

XIII. Practical Computations.—*Three recitation credits per week, second term. Elective for Freshmen.*

XIV. Spherical Trigonometry.—*One recitation, first term. Elective as an extra.*

XV. Solid Analytics.—*One recitation, second term. Elective as an extra.*

G. Bookkeeping.—*Four recitation credits per week, first term. Required of Short-Course students in Agriculture, second year; in Domestic Science, first year.* Mr. Bills.

H. Algebra.—*Five recitation credits per week, second term. Required of students in Short-Course Engineering, second year, and in Domestic Science, second term, second year.* Mr. Bills.

## Military Science and Tactics.

CAPTAIN DOVE.

All male students are required to attend exercises in military instruction during their attendance at the college, unless excused by reason of physical disability. They may, however, be excused after service during four collegiate years. Credit is given for this work on the same basis and under the same regulations as in other departments.

The war department furnishes for use in this instruction United States magazine rifles (Krag-Jorgensen pattern), swords, equipments, and ammunition for target practice. The cadets are organized this year into a battalion of three companies of infantry and band. Theoretical instruction is given by means of lectures and recitations, and practical instruction by means of infantry drills in the school of the squad, the company, and the battalion. The aim of these

military exercises is to improve the physique, to inculcate the habit of prompt and cheerful obedience and courtesy to rightfully constituted authority, to exercise an elevating influence on the conduct of the corps of cadets, and as far as possible to qualify students who take the military course to be company officers of infantry, volunteers or militia, if necessary.

Competitive drills may be held annually between the companies of the battalion. The name of the best drilled company and its commander is placed on the battalion colors.

The names of such students of the graduating class each year as have shown special aptitude for military service will be reported to the Adjutant General of the Army and also to the Adjutant General of the State.

All students in the military department are required to supply themselves, through the commandant, with the prescribed uniform, which consists of dark blue blouse, cap and trousers, white collar and white gloves, military pattern, and black shoes; the insignia of rank of officers and non-commissioned officers to conform to that of the infantry, United States Army.

Uniforms must be worn at all ceremonies, drills, and other forms of practical instruction.

### Subjects.

I. Practical Instruction.—(a) Infantry Drill Regulations, including the school of the squad, of the company, and of the battalion. Ceremonies and Inspections. (b) Small Arms Firing Manual. Sighting drills, position and aiming drills, gallery practice, estimating distance. (c) Field Service Regulations. Orders, advance guards, flank guards, rear guards, outposts, patrolling, and marches and camping whenever possible. (d) Manual of Guard Duty. *Two exercises of one hour each per week, counting as one credit, throughout the year. Required of all the command.*

II. Theoretical Instruction.—United States Infantry Drill Regulations. Small Arms Firing Regulations. Manual of Guard Duty. Field Service Regulations of United States Army. *One recitation credit per week, last nine weeks of first term and first nine weeks of second term. Required of all Freshmen.*

III. Theoretical Instruction.—United States Infantry Drill Regulations, Small Arms Firing Regulations, Manual of Guard Duty, Field Service Regulations of the United States Army, instruction in the preparation of reports, returns, orders, etc., in the method of correspondence, and, in general, in the duties of company and battalion officers. *One recitation credit per week, first nine weeks of first term, and first nine weeks of second term. Required of all commissioned officers.*



## Modern Languages.

MISS MYRICK.

### FRENCH.

I. Elementary French.—Grammar, dictation, conversation, reading of easy prose and poetry. *Three recitation credits per week, throughout the year.*

II. Reading of intermediate texts, composition, conversation, selections from Hugo's *Les Misérables* or similar work. *Three recitation credits per week, throughout the year.*

III. Scientific and Classical French.—*Three recitation credits per week throughout the year. Elective for students who have taken I and II or their equivalents.*

IV. Scientific French.—*From three to five recitation credits, first term; Freshman year. Elective for Freshmen.*

### GERMAN.

I. Elementary German.—Grammar, dictation, conversation, reading of easy prose and poetry. *Three recitation credits per week, throughout the year. Required of Freshmen who do not offer German for entrance.*

II. Reading of texts portraying German life and institutions, composition, conversation. *Three recitation credits per week, throughout the year. Required of Sophomores in Agriculture, Applied Science, Home Economics, and Chemical Engineering.*

III. Scientific German.—*Three recitation credits per week, throughout the year. Elective for students who have taken I and II or their equivalents.*

IV. Scientific German.—*From three to five recitation credits per week, first term; Freshman year. Elective for Freshmen.*

### SPANISH, ITALIAN.

I. Elementary Spanish or Italian.—*Three recitation credits per week, first or second term. Elective.*

## Physics.

PROFESSOR DICKINSON, ASSISTANT PROFESSOR CLOKE.

The instruction given in this department is intended to acquaint the students with the fundamental concepts of physical science. The work will be as broad as is consistent with the time and needs of the students.



This department is equipped with vernier and micrometer calipers, micrometer microscopes, comparator, dividing engine, cathetometer, simple and compound pendulums, and balances for exact measurements in mechanics. It has also apparatus for determining the coefficient of linear expansion and for the determination of specific and latent heats, a weight thermometer apparatus for determining the density of liquids and solids, a thermo-couple for direct determination of temperatures up to  $1650^{\circ}$  C., Melloni's apparatus for investigation in radiant heat, and apparatus for determining the mechanical equivalent of heat.

In light, the laboratory is equipped to carry on the usual college work. The department has apparatus for finding the focal length of lenses and mirrors; a Pulfrich refractometer; spectrometers; an interferometer (Institute of Technology patterns); photometer; total reflectometer; and many smaller instruments, including simple and compound microscopes. The greater part of the above listed apparatus is new, having been recently purchased of foreign makers.

The laboratory for exact measurements in electricity and magnetism is also fitted up with new apparatus recently purchased of the Leeds and Northup Company of Philadelphia, and among other instruments are several types of D'Arsonval galvanometers; Wheatstone bridges, slide wire and post office patterns; standard cells (Clark and Weston types); standards of resistance, capacity, and self-induction; magnetometers; voltmeters; and many smaller instruments sufficient to carry on the usual college work in electrical measurements. For advanced electrical measurements the department is provided with Weston and Thompson ammeters, and voltmeters with both low and high ranges, wattmeters, a Leeds and Northup alternating and direct current comparator.

In the subject of sound the department is provided with apparatus for the determination of wave-length, pitch, frequency, etc.

### Subjects.

I. Descriptive Physics.—A course designed for students in Agriculture. Considerable time is given to the discussion of the principles of mechanics as applied to farm machinery. The course furnishes an excellent foundation for further work in agricultural physics. *Five recitation credits per week, second term. Required of Sophomores in Agriculture and Home Economics.* Assistant Professor Cloke.

II. General Physics.—A mathematical treatment of the subject. *Four recitation credits per week, throughout the year. Required of all Sophomores in Engineering and Applied Science.* Professor Dickinson.

III. Laboratory Physics.—A course in physical measurements intended to teach students methods and to form a basis for future engineering work. The calculation of results will be given special attention. *One and one-half laboratory credits per week, throughout the year. Required of Sophomores in Engineering and Applied Science.* Assistant Professor Cloke.

IV. Electrical Measurements.—A course of lectures treating of the theory and manipulation of electrical measuring instruments. *One recitation credit per week, first term. Required of Juniors in Electrical Engineering.* Professor Dickinson.

V. Electrical Measurements Laboratory.—Direct-current measurements, resistance, potential current, magnetic properties of iron and steel, calibration of direct-current instruments. *One and one-half laboratory credits per week, first term. Required of Juniors in Electrical Engineering.* Assistant Professor Cloke.

VI. Principles of Illumination.—A study of different sources of light, the measurements of candle power, and the principles of illuminating engineering. *One recitation credit and one and one-half laboratory credits per week, first term. Required of Juniors in Electrical Engineering.* Assistant Professor Cloke.

## Physical Training.

MISS HARRALL.

All women students are required to attend the gymnasium exercises. These are designed to improve the general health of the young women and to train them in agility, poise and general gracefulness, and to develop alertness and a ready response to any order or request. The exercises are confined to the lighter work of a gymnasium because of a lack of other equipment.

I. Marching; free arm exercises; wand and dumb-bell exercises; Indian club swinging; aesthetic dancing. *One laboratory credit per week, throughout the year. Required of all women students.*

## Woodwork.

MR. T. C. RODMAN.

H. Farm Buildings.—A practical course in the planning of farm structures, estimating quantities of material required, and costs. *One shop credit per week, second term. Required of Short-Course students in Agriculture, second year.*

I. Shopwork.—Woodworking at the bench and lathe. *One and one-half shop credits per week, second term. Required of Short-Course students in Agriculture, first year.*

## Zoölogy.

PROFESSOR BARLOW.

The work in this department is designed to meet the needs of two classes of students, those who are interested in the economic aspect of animal life and those who purpose to become teachers. To meet the needs of the first class, subjects are given which are planned to call attention to the economic importance of the different orders. Much time is allotted to entomology, and in this subject special attention is given to injurious species. For those who are to be teachers, a thorough training is given in the morphology and classification of animals as a preparation for the more special subjects that follow. In these, attention is directed to the habits and relations of animals, which are studied both in the field and laboratory.

The laboratory is equipped with a series of charts, valuable models, and many mounted skeletons. The Rhode Island birds are represented by mounted specimens of practically every species; fishes; reptiles, and batrachians, by alcoholic preparations. The collection of insects, begun recently, now fills about one hundred cases, and is being steadily increased. Each student is given the use of compound and dissecting microscopes. The necessary instruments for laboratory work can be procured at small cost at the college store.

### Subjects.

I. General Zoölogy.—Discussion of the more important laws of biology and the dissection of representatives of the more important Phyla. *Two laboratory and two recitation credits per week, first term. Required of Sophomores in Agriculture, Home Economics, and Applied Science.*

II. General Zoölogy.—Special attention is given to the relation of animals to their surroundings. *Two laboratory credits and one recitation credit per week, second term. Option for Seniors in Applied Science.*

III. Physiology.—The physiology of the higher mammals. *One laboratory and three recitation credits per week, second term. Required of Sophomores in Agriculture, Home Economics, and Applied Science.*

IV. Economic Entomology.—*One laboratory and three recitation credits per week, second term. Option for Juniors in Agriculture and Applied Science.*

V. General Entomology.—*Two laboratory credits and one recitation credit per week, first term; two recitation and two laboratory credits per week, second term. Option for Seniors in Applied Science.*

VI. Systematic Entomology.—*Three or five laboratory credits per week, throughout the year. Elective for those who are taking or have taken Zoölogy V.*

VII. Vertebrate Anatomy.—*Three laboratory credits per week, first term. Required of Juniors in Home Economics. Option for Juniors in Applied Science.*

VIII. Histology and Embryology.—*Three laboratory and two recitation credits per week, second term. Required of Juniors in Home Economics. Option for Juniors in Applied Science.*

IX. Methods in Nature Study.—*Bird life, habits of insects, aquaria. One and one-half laboratory or field credits per week, second term. Elective.*

A. Elementary Zoölogy.—*Deals with forms of economic importance. Three recitation and one and one-half laboratory credits per week, first term. Required of Short-Course students in Agriculture and Domestic Science, first year.*

## Organizations.

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### Athletic Association.

HAROLD WILLIAM BROWNING.....	President.
GEORGE HOLLAND BALDWIN.....	Vice-President.
PROFESSOR BARLOW.....	Treasurer.

### Agricultural Club.

CLARENCE ELMER BRETT.....	President.
WILLIAM EDWIN ANDERSON.....	Vice-President.
FRANK ARTHUR CARROLL.....	Secretary.
MYRON ANGELL HAWKINS.....	Treasurer.

### Debating Society.

FRANK HAROLD BRIDEN.....	President.
EDWARD JAMES BOULESTER.....	Vice-President.
ALOY SOONG.....	Secretary.
HENRY ELLIS DAVIS.....	Treasurer.

### Glee Club.

EARL CLIFTON WEBSTER.....	Manager.
JAMES HANNIBAL YOUNG.....	Leader.

### Lecture Association.

WALTER COLWELL IRONS.....	President.
DOROTHY DEARBORN ELKINS.....	Secretary.
PROFESSOR WALES.....	Treasurer.

### Student Council.

CLARENCE ELMER BRETT.....	President.
LEROY BURGESS NEWTON.....	Vice-President.
NORMAN HARRISON BORDEN.....	Secretary-Treasurer.



**Young Men's Christian Association.**

FRANK HAROLD BRIDEN.....	President.
JAMES RUSSELL ESTY.....	Vice-President.
MYRON WHITMARSH FINCH.....	Secretary.
HAROLD WILLIAM BROWNING.....	Treasurer.

**Young Women's Christian Union.**

DOROTHY DEARBORN ELKINS.....	President.
OLIVE NICHOLSON.....	Vice-President.
ADELAIDE GILBERT WATSON.....	Secretary.
JANET SAXON GRAY.....	Treasurer.

## BATTALION ORGANIZATION, JANUARY, 1913.

**Commandant:**

WILBUR E. DOVE, Captain, United States Army.

CADET OFFICERS AND NON-COMMISSIONED OFFICERS.

*Battalion.*

Major.....	JOHN L. SULLIVAN.
First Lieutenant and Adjutant.....	JAMES H. YOUNG.
Second Lieutenant, Quartermaster and Commissary.....	JOHN W. CORR.
Sergeant-Major.....	BENJAMIN COHEN.
Quartermaster Sergeant.....	FRANK STECK.
Color Sergeant.....	WALTER R. TURNER.
Color Sergeant.....	GEORGE E. SLOCUM.

*Company A.*

Captain.....	WILLIAM H. TULLY.
First Lieutenant.....	WILFRED C. MATTHEWS.
Second Lieutenant.....	WALDO REINER.
First Sergeant.....	HENRY E. DAVIS.
Quartermaster Sergeant.....	LEROY B. NEWTON.
Sergeant.....	HAROLD W. BROWNING.
Sergeant.....	MILTON H. PRICE.
Corporal.....	LEROY A. WHITTAKER.
Corporal.....	WILLIAM E. LEWIS.
Corporal.....	NORMAN H. BORDEN.
Corporal.....	JOHN BRECHIN.

*Company B.*

Captain.....	FRANK H. BRIDEN.
First Lieutenant.....	WILLIAM H. WEBB.
Second Lieutenant.....	JAMES R. ESTY.
First Sergeant.....	GEORGE H. BALDWIN.
Quartermaster Sergeant.....	REUBEN C. BATES.
Sergeant.....	FRANK H. BAXTER.
Sergeant.....	EARL C. WEBSTER.
Corporal.....	CEDRIC H. COLLINS.
Corporal.....	FRED O. ASPINWALL.
Corporal.....	CURTIS W. GATES.
Corporal.....	JOHN L. JACKOWITZ.

*Company C.*

Captain.....	IRVING C. MITCHELL.
First Lieutenant.....	RALPH I. ALEXANDER.
Second Lieutenant.....	WILLIAM F. REDDING.
First Sergeant.....	HERBERT REINER.
Quartermaster Sergeant.....	LEROY M. SHERWIN.
Sergeant.....	LORENZO F. KINNEY, JR.
Sergeant.....	JOHN C. GLYNN.
Corporal.....	MYRON W. FINCH.
Corporal.....	JAMES H. ALDRED.
Corporal.....	ERROLL K. WILCOX.
Corporal.....	EDWARD J. BOULESTER.
Corporal.....	WILLIAM E. ANDERSON.

*Band.*

Chief Musician (with rank of 2nd Lieutenant).....	CRAWFORD P. HART.
Principal Musician.....	OLIVER H. STEDMAN.
Drum Major.....	SETH A. CALDWELL.
Sergeant.....	WALTER C. IRONS.
Sergeant.....	ARTHUR L. REYNOLDS.
Sergeant.....	CHESTER W. RUGG.
Corporal.....	ALBERT C. HUNTER.
Corporal.....	ALVAH G. WOODWARD.
Corporal.....	GEORGE M. LEWIS.

## Alumni Association.

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CALVIN LESTER COGGINS, 1907.....President.  
Hoboken, N. J.

RANDOLPH HAYWARD CARPENTER, 1910.....Vice-President.  
New York City.

JOHN RALEIGH ELDRED, 1900.....Secretary-Treasurer.  
Kingston, R. I.

### *Executive Committee.*

C. L. COGGINS, 1907  
R. H. CARPENTER, 1910

JOHN R. ELDRED, 1900  
C. T. ARNOLD, 1894

NELLIE A. HARRALL, 1905.

## Prizes and Honors.

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### THE KINGSTON PRIZES

The sum of sixty dollars offered by a friend of the college to encourage literary work among the students, was divided in 1912 into three portions, providing a first prize of twenty-five dollars, a second of twenty, and a third of fifteen dollars, for the best essays submitted in a contest held in June, 1912. The awards were as follows :

#### FIRST PRIZE:

Economic Aspects of Immigration, Aloy Soong.

#### SECOND PRIZE:

The Utilization of Peat, Carle Muzzy Bigelow.

#### THIRD PRIZE:

The Lumiere Method of Color Photography, Lorenzo Foster Kinney, Jr.

### HONORS.

Honors awarded Commencement Day, June 20, 1912:

#### FINAL HONORS FOR FOUR YEARS:

Highest Honors—Henry Newell Barlow, Allae Cordelia Slater, Walter Doll.

High Honors—Carle Muzzy Bigelow.

#### SENIOR.

Henry Newell Barlow,  
George William Sherman, Jr.,  
Fred Allen Richmond,  
Allae Cordelia Slater,  
Walter Doll,  
Carle Muzzy Bigelow,  
Arthur John Patterson,

#### JUNIOR.

Marguerite White Elkins,  
Susie Stanton Wood,  
Dorothy Dearborn Elkins,  
Clarence Elmer Brett,  
Irving Calvary Mitchell.



## SOPHOMORE.

Olive Nicholson,  
Lorenzo Foster Kinney, Jr.,  
Harold William Browning,  
James Hilton Aldred,  
Helen Wheeler Ford,  
Myron Angell Hawkins,  
Sarah Alice Nicholson,  
Frederick Otto Aspinwall.

## FRESHMAN.

Norman Harrison Borden,  
Wesley Clifton Miller,  
Joseph Elton Nichols,  
Henry Harrington Broadfoot,  
Curtis Walcott Gates.

**Degrees Conferred in 1912.****Bachelor of Science.**

Henry Newell Barlow,  
Carle Muzzy Bigelow,  
Dorothy Walcott Caldwell,  
Philip Harrison Clarke,  
Electra Henrietta Cobb,  
Walter Doll,  
Ethel Pierce Henderson,  
Annie Eliza Kenyon,

Charles Herbert Larkin,  
Bertha May Nutting,  
Arthur John Patterson,  
Fred Allen Richmond,  
George William Sherman, Jr.,  
Allae Cordelia Slater,  
David Edmond Warner, Jr.,  
Samuel C. Webster, Jr.,  
William Joseph Whalen.

**Certificates Awarded in 1912.****Two-Year Course in Domestic Science.**

Elizabeth Croucher,  
Helen Macy Tefft.

**Two-Year Course in Mechanic Arts.**

Samuel James Henderson.

## Students.

### Graduates.

Caldwell, Dorothy Walcott (Rhode Island State College).....	Kingston.
Lichtenthaeler, Robert Arthur (Univ. of North Carolina).....	Kingston.
Maynard, Leonard Andy (Wesleyan Univ.).....	Kingston.
Seabright, John Elbright (Univ. of Va.).....	Kingston.

### Seniors.

Alexander, Ralph Irwin, Mech. Eng. ....	Kingston.
Aspinwall, Frederick Otto, Chem. Eng. ....	Pawtucket.
Bates, Reuben Charles, Civ. Eng. ....	Providence.
Brett, Clarence Elmer, Agr. ....	Kingston.
Briden, Frank Harold, Mech. Eng. ....	Central Falls.
Cohen, Benjamin, Elec. Eng. ....	Kingston.
Congdon, Esther Loomis, Home Econ. ....	Wakefield.
Corr, John William, Appl. Sci. ....	East Greenwich.
Elkins, Dorothy Dearborn, Home Econ. ....	Amesbury, Mass.
Elkins, Marguerite White, Home Econ. ....	Amesbury, Mass.
Hart, Crawford Peckham, Agr. ....	Melville Station.
Irons, Walter Colwell, Agr. ....	North Scituate.
Kyle, Thomas, Agr. ....	Central Falls.
Mitchell, Irving Calvary, Appl. Sci. ....	Kingston.
Redding, William Francis, Elec. Eng. ....	Meshanticut.
Reiner, Waldo, Civ. Eng. ....	Brooklyn, N. Y.
Reynolds, Arthur Leslie, Elec. Eng. ....	Providence.
Slocum, George Edwin, Elec. Eng. ....	Providence.
Steck, Frank, Chem. Eng. ....	Kingston.
Turner, Walter Raymond, Appl. Sci. ....	Johnston.
Wilcox, Erroll Kenyon, Civ. Eng. ....	Norwich Town, Conn.
Wood, Susie Stanton, Home Econ. ....	Slocum.
Young, James Hannibal, Appl. Sci. ....	Kingston.

### Juniors.

Aldred, James Hilton, Mech. Eng. ....	Ashton.
Anderson, William Edward, Agr. ....	Westerly.
Baldwin, George Holland, Agr. ....	Valley Falls.
Baxter, Frank Howard, Mech. Eng. ....	Kingston.
Benson, Robert John, Elec. Eng. ....	Kingston.
Boulester, Edward James, Appl. Sci. ....	Providence.

Browning, Harold William, Appl. Sci.	Matunuc.
Caldwell, Seth Atherton, Mech. Eng.	Woonsocket.
Collins, Cedric Hamlin, Civ. Eng.	Berkeley.
Connor, Thomas Rowley, Civ. Eng.	Wakefield.
Davis, Henry Ellis, Agr.	Edgewood.
Esty, James Russell, Chem. Eng.	Slatersville.
Finch, Myron Whitmarsh, Agr.	Providence.
Ford, Helen Wheeler, Home Econ.	North Easton, Mass.
Hawkins, Myron Angell, Agr.	Providence.
Jones, Carleton Walter, Civ. Eng.	Providence.
Karmann, Hermann Harry, Civ. Eng.	Providence.
Kinney, Lorenzo Foster, Jr., Appl. Sci.	Kingston.
Nicholson, Olive, Home Econ.	Pawtucket.
Nicholson, Sarah Alice, Home Econ.	Pawtucket.
Reiner, Frieda, Home Econ.	Brooklyn, N. Y.
Reiner, Herbert, Agr.	Brooklyn, N. Y.
Rossi, Louis, Civ. Eng.	Westerly.
Safford, Edith Marie, Home Econ.	Lancaster, Mass.
Soong, Aloy, Chem. Eng.	Canton, China.
Stedman, Oliver Hazard, Elec. Eng.	Peace Dale.
Sullivan, John Leo, Mech. Eng.	Lonsdale.
Thayer, Harold Francis, Appl. Sci.	Woonsocket.
Tully, William Henry, Appl. Sci.	Peace Dale.
Turner, Harvey Robert, Civ. Eng.	Providence.
Watson, Adelaide Gilbert, Home Econ.	Peace Dale.
Webb, William Harry, Elec. Eng.	Howard.
Webster, Earl Clifton, Civ. Eng.	Providence.
Whittaker, Leroy Allen, Elec. Eng.	Central Falls.
Young, Edwin Olney, Elec. Eng.	East Greenwich.

### Sophomores.

Allenson, Clifford Arnold, Elec. Eng.	Central Falls.
Barney, Raymond Livingston, Appl. Sci.	Providence.
Belfit, Robert William, Chem. Eng.	Kingston.
Borden, Norman Harrison, Chem. Eng.	Providence.
Brehin, John, Mech. Eng.	Bristol.
Broadfoot, Henry Harrington, Chem. Eng.	Westerly.
Brownell, Kenneth Allen, Chem. Eng.	Adamsville.
Cloke, Philip Royal, Elec. Eng.	Kingston.
Coleman, Carl Lafayette, Agr.	Orange, Mass.
Donovan, Lillian Marguerite, Appl. Sci.	Westerly.
Flaherty, Eugene Joseph, Elec. Eng.	North Attleboro, Mass.
Gates, Curtis Wolcott, Chem. Eng.	New London, Conn.
Glynn, John Charles, Agr.	New London, Conn.
Gray, Janet Saxon, Home Econ.	Allenton.
Hall, Carlisle, Agr.	Providence.

Harding, Ada LaPlace, Home Econ.	Lyme, Conn.
Harris, Leon Irving, Chem. Eng.	Bryantville, Mass.
Hudson, Royal Carlton, Appl. Sci.	Phenix.
Hunter, Albert Clayton, Appl. Sci.	East Providence.
Jackowitz, John Louis, Appl. Sci.	East Providence.
Keith, Lawrence Fuller, Agr.	Brockton, Mass.
Kelly, Henry Clinton, Civ. Eng.	Nayatt.
Kivlin, Alfred Patrick, Elec. Eng.	Kingston.
Lennox, Frank Joseph, Chem. Eng.	Woonsocket.
Lewis, William Emanuel, Agr.	East Providence.
Matthews, Wilfred Chipman, Elec. Eng.	Providence.
McIntosh, Albert Edward, Civ. Eng.	Providence.
Meyer, Frank Harry, Elec. Eng.	Kingston.
Miller, Wesley Clifton, Elec. Eng.	Providence.
Mowry, Harold Conrad, Civ. Eng.	North Scituate.
Newton, Leroy Burgess, Civ. Eng.	West Barrington.
Nichols, Joseph Elton, Mech. Eng.	Woonsocket.
Nordquist, Harry Oscar Valdemar, Civ. Eng.	Providence.
Parker, Ralph Langley, Agr.	Kingston.
Price, Milton Harris, Agr.	Providence.
Rugg, Chester Warren, Civ. Eng.	Brocton, N. Y.
Senior, Walter Curtis, Agr.	Ipswich, Mass.
Shea, Joseph Francis, Elec. Eng.	Valley Falls.
Spofford, William Preston, Mech. Eng.	Providence.
Tabor, Frank Edward, Elec. Eng.	Slatersville.
Wales, Wilfred Nichols, Mech. Eng.	Groveland, Mass.
Wilcox, Harold Clayton, Agr.	South Milford, Mass.
Woodward, Alvah Gray, Elec. Eng.	Wakefield.

### Freshmen.

Albro, Roland Gould, Eng.	Peace Dale.
Aldrich, Daniel Gaskill, Agr.	Georgiaville.
Allen, Kenneth, Eng.	Pawtucket.
Allenson, Chester Williams, Elec. Eng.	Central Falls.
Anthony, Harold Congdon, Agr.	Newport.
Babbitt, Walker Edmands, Mech. Eng.	Spencer, Mass.
Brigham, Wesley Crowell, Eng.	Pawtucket.
Burr, Dorothy Isabelle, Home Econ.	East Providence.
Carleton, Everett Augustus, Agr.	Greenwood, Mass.
Chantler, Ambrose Royle, Eng.	Pawtucket.
Clarke, Helena Frances, Appl. Sci.	East Greenwich.
Conyers, Clarence John, Agr.	Providence.
Cordin, Gilbert Ralph, Eng.	Providence.
Curran, Emilie May, Home Econ.	Pawtucket.
Daniels, Henry Fales, Eng.	Pawtucket.
Datson, Olive Marguerite, Home Econ.	Westerly.
Easterbrooks, Wilfred R., Eng.	Wakefield.

Ebbs, Robert Allen, Eng.	Newport.
Faron, Frank Aloysius, Eng.	Woonsocket.
Field, Ernest George, Eng.	Providence.
Fleagle, Ruth Ellen, Home Econ.	Baltimore, Md.
Fraser, Dean Blenus, Eng.	Brockton, Mass.
Freeman, Thomas William, Eng.	Newport.
Glasheen, Ralph Earle, Eng.	Brockton, Mass.
Goddard, Franklin Perry, Eng.	Newport.
Guinness, George Garner, Agr.	Providence.
Hanlin, William Frank, Agr.	Arlington.
Hawkins, Clinton Dexter, Eng.	Pawtucket.
Hayward, Kenneth Chase, Eng.	South Easton, Mass.
Henninger, Roswell Woodward, Agr.	Williamsport, Pa.
Henry, James Murray, Eng.	Stonington, Conn.
Hill, Edwin Douglass, Agr.	Providence.
Holley, Leonard Stanley, Agr.	Peace Dale.
Hoxsie, Annie Sarah, Home Econ.	Canonchet.
Kirk, Robert Charles, Eng.	Pawtucket.
Lagerstedt, Seth Frederick Hadley, Agr.	Brockton, Mass.
Laity, Howard Maxwell, Eng.	Wakefield.
Leonard, Edgar Babcock, Agr.	Providence.
Lloyd, Lester William, Agr.	Chester, Mass.
Longton, Robert Thomas, Eng.	Brockton, Mass.
Lussier, George Emile, Eng.	Woonsocket.
Mailloux, Leonard Hormisdas, Eng.	Woonsocket.
McCormick, John Lawrence, Eng.	Glendale.
McGill, John Henry, Eng.	Cranston.
McGill, Joseph Edwin, Eng.	Woonsocket.
Medbery, Henry Edmund, Agr.	East Providence.
Milnes, Charles Irving, Eng.	Providence.
Morrison, Philip William, Jr., Agr.	Greenwood, Mass.
Munroe, Henry Dodge, Agr.	Campello, Mass.
O'Byrne, Christopher James, Eng.	Brockton, Mass.
Palmer, Theodore Andrew, Agr.	Hope Valley.
Parker, Clarence Howard, Eng.	Brockton, Mass.
Premo, John, Eng.	Wakefield.
Quintero, Carlos, Agr.	Panama, Panama.
Randall, Bertha Adelaide, Home Econ.	Providence.
Randall, Phineas Munsell, Jr., Eng.	Westerly.
Redfern, Ernest Elmer, Eng.	Woonsocket.
Rose, Elizabeth Marie, Home Econ.	Wakefield.
Rowell, Homer Ranson, Agr.	Groveland, Mass.
Scott, Rust, Eng.	Providence.
Seifert, Charles Edward, Eng.	Chepachet.
Shanahan, Frank C., Eng.	Newport.
Short, Carleton Webb, Eng.	East Providence.
Slocum, Kenneth Matteson, Eng.	Central Falls.
Smith, Harold Buren, Eng.	Brockton, Mass.



Stedman, William Earl, Eng.	Wakefield.
Steere, Edith Tinkham, Home Econ.	Providence.
Sullivan, Daniel Leo, Eng.	Providence.
Sweet, Russell Herndon, Civ. Eng.	Wakefield.
Tillinghast, Harold Webster, Eng.	East Greenwich.
Victory, Thomas Francis, Eng.	Warren.
Walmsley, Earl, Eng.	Anthony.
Wells, Lester Earl, Eng.	East Greenwich.
Young, Vincent Case, Eng.	Bristol.

### Irregular.

Dodge, William Earl, Mech. Eng.	Providence.
Forman, Howard Lee, Agr.	Brooklyn, N. Y.
Goddard, Archie Coggeshall, Agr.	Newport.
Godin, Fred Joseph, Agr.	Kingston.
Lewis, George Mitchell, Eng.	Kingston.
Loftus, John, Eng.	West Kingston.
Sherwin, Leroy Merton, Agr.	Kingston.
Tsagarakis, Emanuel, Agr.	Attleboro, Mass.
Weston, Richard Ward, Agr.	West Bridgewater, Mass.

### Two-Year Course.

Allen, Harriet Budlong, Dom. Sci.	Providence.
Arnold, Doris DeVheger, Dom. Sci.	Washington.
Barber, Albert Edwin, Eng.	Peace Dale.
Burke, Thomas Francis, Eng.	Providence.
Carroll, Frank Arthur, Agr.	Woonsocket.
Cassidy, Mark Anselm, Agr.	Woonsocket.
Champlin, William James, Agr.	Slocum.
Chappell, Henry Browning, Agr.	Saunderstown.
Dennis, Kenneth Ross, Agr.	Newport.
Dolliver, John Adams, Agr.	Newport.
Ebbs, Lawrence Knight, Agr.	Newport.
Follansbee, John T. Agr.	Brooklyn, N. Y.
Goodrich, Chester, Agr.	Epping, N. H.
Haas, William Rudolph, Agr.	Newport.
Hartman, John Albert, Agr.	Milford, Mass.
Hope, Earl Joseph, Eng.	Pawtucket.
Hubbard, Allene Frances, Dom. Sci.	Woonsocket.
Hull, Benjamin, Agr.	West Kingston.
Janson, Evan Beaumont, Eng.	Woonsocket.
Jones, Harold Corbin, Agr.	Providence.
Leslie, John Francis, Agr.	Wakefield.
McConnell, Elbert Lowene, Agr.	Brooklyn, N. Y.
O'Neil, Michael Joseph, Eng.	Providence.
Parsons, John Hayward, Mech. Eng.	Kingston.

Pyper, Gordon Fenn, Agr.....	Conimicut.
Shedd, Clark Henry, Agr.....	East Providence.
Swift, Howard Erastus, Eng.....	Lee, Mass.
Tanner, Edmund Johnson, Agr.....	Carolina.
Tillotson, Irving Smith, Eng.....	Providence.
Tourgee, William Lester, Chem.....	Peace Dale.
Waller, Mary Robinson, Dom. Sci.....	Washington, D. C.
Weir, Helen M., Dom. Sci.....	West Kingston.
Weir, Millie Elizabeth, Dom. Sci.....	West Kingston.
Worrall, Alton H., Eng.....	Attleboro, Mass.

### Poultry-Keeping.

Aspland, John H.....	Pawtucket.
Broadbent, Thomas George.....	Pawtucket.
Burgess, Albert White.....	Providence.
Carson, Arthur.....	North White Plains, N. Y.
Clark, Arthur L.....	Jamaica Plain, Mass.
Condit, Margaret C.....	Hulett's Landing, N. Y.
Edelman, Israel.....	Washington, D. C.
Elitch, Charles John.....	East Orange, N. J.
Esten, Mrs. Benjamin R.....	North Attleboro, Mass.
Ford, F. Gualdo.....	Morristown, N. J.
Gendelman, Sophie.....	West Haven, Conn.
Gledhill, Lloyd H.....	Wakefield.
Johanson, Carl A.....	Newport.
Kline, George.....	Atlantic City, N. J.
Mann, Keeler G.....	New York, N. Y.
Moran, Charles F.....	Jericho, Vt.
Nute, Charles B.....	Lakeville, Mass.
Olsson, Eric G.....	New Bedford, Mass.
Owens, Walton.....	Bridgeville, Del.
Pilblad, Victor.....	Providence.
Shepardson, Howard Edward.....	Attleboro Falls, Mass.
Wright, Howard Whitford.....	Attleboro Falls, Mass.

### Summary.

Graduate students.....	4
Seniors.....	22
Juniors.....	35
Sophomores.....	44
Freshmen.....	73
Irregulars.....	9
Two-Year Courses.....	34
Poultry Students.....	22

Total number of students (none counted twice)..... 243

## Graduates.\*

1894.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ADAMS, GEORGE EDWARD . . . Kingston.	Agr.	Professor of Agronomy, R. I. S. C.
AMMONDS, GEORGE CLARENCE . . 5 Boylston Place, Boston, Mass.	Mech.	Railroad Postal Clerk, on N. Y., N. H. & H. R. R.
ARNOLD, CHAPIN TRAFFORD . . . 52 Wood St., Providence.	Agr.	Electrical Contractor, Office 26 Custom House St., Providence.
BURLINGAME, GEO. WASHINGTON . R. F. D. No. 2, Box 56, North Scituate.	Agr.	Farmer and Teacher.
CLARK, HELEN MAY (MRS. WM. F. B. LEAVITT), B. L., Smith Col- lege, 1899. Essex Fells, New Jersey.		At home.
KNOWLES, JOHN FRANKLIN . . . Kingston.	Mech.	With Contractor John Bristow.
†MADISON, WARREN BROWN . . .	Agr.	
MATHEWSON, ERNEST HOXSIE . . Ph. B., Brown University, 1896. Reidsville, North Carolina.	Mech.	Crop Technologist in Tobacco, U. S. Department of Agriculture.
PECKHAM, REUBEN WALLACE . . . Melville Station, Newport.	Agr.	Market Gardener.
RATHBUN, WILLIAM SHERMAN . . . Northampton, Mass.	Agr.	With Printing Department, Eureka Ruling and Binding Co., Hol- yoke, Mass.
RODMAN, GEORGE ALBERT . . . New Haven, Conn.	Mech.	Inspector, Bridges and Buildings, Room 24, General Office Bldg., N. Y., N. H. & H. R. R. Co.
SARGENT, CHARLES LAWRENCE . . Ph. D., University of Pennsylvania, 1900. 9 Thomas St., Newark, New Jersey.	Agr.	Superintendent, Color Department, Murphy Varnish Co.
SLOCUM, SAMUEL WATSON . . . 130 West Broad St., Westerly.	Agr.	Carpenter.
SPEARS, JOHN BARDEN . . . Foster Centre.	Agr.	Rural Letter Carrier.

\*It is earnestly desired that graduates inform the college office of any permanent change of address.

† Deceased.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
SWEET, STEPHEN ADELBERT . . . Slocums.	Agr.	Farmer.
TUCKER, GEORGE MASON . . . Ph. D. Göttingen, 1899. Washington, D. C.	Agr.	Editorial Staff, Experiment Station Record, U. S. Department of Agriculture.
WILBUR, ROBERT ARTHUR . . . East Greenwich.	Mech.	Carriage-maker and blacksmith.

## 1895.

*ALBRO, LESTER FRANKLIN . . .	Agr.	
BURDICK, HOWLAND . . . Kingston.	Agr.	Instructor in Dairying, R. I. S. C.
CLARKE, CHARLES SHERMAN . . . Jamestown.	Mech.	Marine Engineer.
ELDRED, MABEL DEWITT . . . Kingston.		Instructor in Drawing, R. I. S. C.
HAMMOND, JOHN EDWARD . . . Jamestown.	Agr.	Farmer.
OATLEY, LINCOLN NATHAN . . . Wakefield.	Mech.	Contractor and builder; Coal Dealer.
SCOTT, ARTHUR CURTIS . . . Ph. D., Univ. of Wisconsin, 1902. Dallas, Texas.	Mech.	President, Scott Engineering Co., 632 Wilson Building.
TEFFT, JESSE COTTRELL . . . Jamestown.	Mech.	Purser, Newport and Jamestown Ferryboat Co.
WINSOR, BYRON EDGAR . . . Coventry.	Mech.	Poultryman.

## 1896.

BROWN, MAY (MRS. CHARLES A. WHITE). Narragansett Pier.		At home.
GREENMAN, ADELAIDE MARIA (MRS. R. WALLACE PECKHAM) . Melville Station, Newport.		At home.
KENYON, ALBERT LEWIS . . . 35 Chestnut St., South Manchester, Conn.	Mech.	Mechanic.
MOORE, NATHAN LEWIS CASS . . . Venice, Florida.	Agr.	Fruit-Grower, citron culture.
TABOR, EDGAR FRANCIS . . . 69 Doyle Ave., Providence.	Mech.	Calico Printer, U. S. Finishing Co., Silver Spring Branch.
*WILLIAMS, JAMES EMERSON . . .	Agr.	

## 1897.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CARMICHAEL, WELCOME SANDS . Shannock.	Sci.	Bookkeeper, Providence Journal Co., Providence
CASE, HERBERT EDWARDS BROWN . Ph. B., Brown University, 1900. Graduate, Hartford Theological Seminary, 1904. 14 Beacon St., Boston, Mass.	Mech.	Assistant, Foreign Department, Amer. Board of Commissioners for Foreign Missions.
GRINNELL, ARCHIE FRANKLIN . Providence.	Mech.	Draftsman, Brown & Sharpe Mfg. Co.
HANSON, GERTRUDE MAIE . . Kingston.	Sci.	Teacher.
HOXSIE, BESSIE BAILEY (Mrs. E. F. RUECKERT) . . 98 Melrose St., Providence.	Sci.	At home.
KENYON, ALBERT PRENTICE . . 10 West St., Westerly.	Mech.	Bookkeeper, Maxson & Co., West- erly.
KENYON, CHARLES FRANKLIN . Shannock.	Mech.	Engineer, White Bros., White Val- ley, Mass.
LARKIN, JESSIE LOUISE . . . 98 Beach St., Westerly.	Sci.	Genealogist.
*MARSLAND, LOUIS HERBERT . .	Mech.	
TEFFT, ELIZA ALICE . . . .	Sci.	Teacher, East Greenwich.
1 Stanton St., Westerly.		
THOMAS, IRVING . . . . .	Mech.	Designer of Patterns.
Slocums.		

## 1898.

ARNOLD, SARAH ESTELLE (Mrs. R. O. BROOKS) . . . .	Sci.	At home.
975 East 18th St., Brooklyn, N. Y.		
BARBER, GEORGE WASHINGTON .	Agr.	Rancher.
Glendora, Cal.		
CARGILL, EDNA MARIA (Mrs. LESTER H. BROWN) . .	Sci.	At home.
4 Highland Ave., Lonsdale.		
CASE, JOHN PETER . . . . .	Agr.	Mgr., Western Office, Brown Hoist- ing Machinery Company.
251 Monadnock Bldg., San Fran- cisco, Cal.		
CLARK, WILLIAM CASE . . . .	Sci.	General Manager, Narragansett Pier Elec. Light and Power Co.; Mgr., Wickford Light and Water Co.; Div. Supt., Rhode Island Co.
Wakefield.		
CONGDON, HENRY AUGUSTUS . .	Mech.	Farmer.
Kingston.		



NAME AND ADDRESS.	COURSE.	OCCUPATION.
FLAGG, MARTHA REBECCA . . . Hardwick, Mass.	Sci.	At home.
HARLEY, WILLIAM FERGUSON . . 62 Hillside Ave., Providence.	Agr.	Buyer, with Messrs. Callender, McAuslan & Troup, Providence.
TURNER, HARRIETTE FLORENCE (MRS. GEO. M. TUCKER) . . . Graduate, Drexel Institute, 1900. Washington, D. C.	Sci.	At home.
WILSON, GRACE ELLEN (MRS. W. F. HARLEY) . . . . 62 Hillside Ave., Providence.	Sci.	At home.

## 1899.

BOSWORTH, ALFRED WILLSON . .	Sci.	Graduate Student, Harvard University.
6 Perry St., Brookline, Mass.		
BROOKS, RALPH ORDWAY . . . .	Sci.	Consulting Chemist, Bacteriologist, Microscopist, Food-Inspection Expert, 191 Franklin St., New York City.
975 East 18th St., Brooklyn, N. Y.		
GEORGE, LILLIAN MABELLE . . .	Sci.	Cataloguer, Purdue University Library.
A. B., Univ. Ill., 1904.		
Graduate, N. Y. State Library School, 1910.		
220 Waldron St., West Lafayette, Indiana.		
HARVEY, MILDRED WAYNE (MRS. WM. H. BLISS) . . . .	Sci.	At home.
407 W. 123rd St., New York City.		
KENYON, BLYDON ELLERY . . . .	Agr.	Consulting Engineer.
632 Wilson Bldg., Dallas, Texas.		
KNOWLES, CARROLL . . . . .	Mech.	Chief Tool Designer, Brown & Sharpe Mfg. Co.
77 Chiswick Road, Edgewood.		
KNOWLES, HARRY . . . . .	Sci.	Reporter, Newark Sunday Call.
Ph. B., Brown University, 1906.		
1182 Broad St., Newark, N. J.		
LADD, MERRILL AUGUSTUS . . .	Mech.	Sales Agent, Power and Mining Dept., General Electric Co.
Jacksonville, Fla.		
MORRISON, CLIFFORD BREWSTER .	Sci.	Chemist.
543 Broad St., Providence.		
OWEN, WILLIAM FRAZIER . . . .	Mech.	Engineering Department, General Electric Co.
Schenectady, N. Y.		
PAYNE, EBENEZER . . . . .	Sci.	Orange Grower.
M. D., Univ. Michigan, 1904.		
Glendora, Cal.		

NAME AND ADDRESS.	COURSE.	OCCUPATION.
PHILLIPS, WALTER CLARKE . . . Ph. B., Brown University, 1902. A. M., Brown University, 1903. 325 Livingston Hall, New York City.	Mech.	Graduate Student, Columbia University.
REYNOLDS, ROBERT SPINK . . . Room 314, Gen. Office Bldg., New Haven, Conn.	Mech.	Assistant Engineer, Bridge Dept., N. Y., N. H. & H. R. R. Co.
RICE, MINNIE ELIZABETH (MRS. ROBERT J. SHERMAN) . . . Exeter Hill.	Sci.	At home.
SHERMAN, ABBIE GERTRUDE (MRS. BENJAMIN BARTON) . . . 56 Pavilion Ave., Providence.	Sci.	At home.
*SHERMAN, GEORGE ALBERT . . .	Mech.	
THOMPSON, SALLY RODMAN (MRS. LEWIS BALCH, JR.) . . . Wakefield.	Sci.	At home.

## 1900.

BRIGHTMAN, HENRY MAXSON . . . 50 Church St., New York City.	Mech.	Heating and Ventilating Engineer with B. F. Sturtevant Co.
CROSS, CHARLES CLARK . . . Detroit, Mich.	Mech.	Supt. of Inspection, Chalmers Motor Co.
ELDRED, JOHN RALEIGH . . . Kingston.	Mech.	Instructor in Mechanical Engineer- ing, R. I. S. C.
FISON, GERTRUDE SARAH (MRS. JOHN W. ROOT) . . . 21 Oxford St., Malden, Mass.	Sci.	At home.
FRY, JOHN JOSEPH . . . R. F. D., Greenwich, Conn.	Sci.	Principal, Coscob School.
GODDARD, EDITH (MRS. LAWRENCE B. REED) . . . 10 North St., Plymouth, Mass.	Sci.	At home.
KENYON, AMOS LANGWORTHY . . . Wood River Junction.	Agr.	Dairyman.
MUNRO, ARTHUR EARLE . . . Ph. B., Brown University, 1902. 41 George St., Providence.	Sci.	Attorney-at-Law, 49 Westminster St.
SOULE, RALPH NELSON . . . 488 Montclair Ave., Detroit, Mich.	Sci.	
STEERE, ANTHONY ENOCH . . . Waterloo, N. Y.	Mech.	Resident Civil Engineer, charge Residency No. 3, New York State Barge Canal.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
STILLMAN, LENORA ESTELLE . . . 1229 Gates Ave., Brooklyn, N. Y.	Sci.	Teacher.
TUCKER, BERTHA DOUGLASS . . . R. F. D. No. 2, Box 105, Swansea, Mass.	Sci.	Dressmaker.
WHEELER, CHARLES NOYES . . . 97 Garden St., Pawtucket.	Sci.	Clerk, Wm. H. Haskell Manufacturing Co.
WILSON, JOSEPH ROBERT . . . Allenton.	Mech.	Surveyor, Alberta, Canada.

## 1901.

BRAYTON, CHARLES ANDREW . . . Hope, R. F. D.	Agr.	Farmer.
BRIGGS, NELLIE ALBERTINE . . . Providence.	Sci.	Stenographer, R. I. Hospital Trust Co.
BURGESS, CHARLES STUART . . . 264 Sayles St., Providence.	Mech.	Draughtsman, Brown & Sharpe Mfg. Co.
CLARNER, LOUIS GEORGE KARL, JR. Arnold's Mills.	Sci.	Farmer.
DAWLEY, EDNA ETHEL . . . (Mrs. GEORGE W. WHITFORD), West Kingston, R. F. D., Box 80.	Sci.	At home.
DENICO, ARTHUR ALBERTUS . . . Ph. B., Brown Univ., 1904. 450 Audubon Ave., New York City.	Sci.	With American Telephone and Telegraph Co., Traffic Dept.
*JAMES, RUTH HORTENSE (Mrs. HERBERT E. ROUSE) . . .	Sci.	
SHERMAN, ANNA BROWN . . . 49 Roger Williams Ave., Providence.	Sci.	Publisher.
SHERMAN, ELIZABETH AGNES . . . 424 Mass. Ave., Boston, Mass.	Sci.	Secretary to Research Chemist, Arthur D. Little, Inc., Boston.
SMITH, HOWARD DEXTER . . . A. M., Brown University, 1904. Ph. D., Tufts College, 1906. 14 Holden St., Lowell, Mass.	Sci.	Instructor in Chemistry, Lowell Textile School.
STEERE, ROWENA HOXSIE . . . 102 Sassafras St., Providence.	Sci.	Stenographer.
WILBY, JOHN . . . Flat River, Missouri.	Sci.	Supply Clerk, Central Lead Co.

## 1902.

CLARKE, LATHAM . . . A. M., Brown University, 1903. Ph. D., Harvard University, 1905. Montevideo, Uruguay.	Chem.	Assistant Director, Bureau of Chemistry, for Government of Uruguay.
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NAME AND ADDRESS.	COURSE.	OCCUPATION.
FERRY, OLIVER NEEDHAM . . . 217 Sackett St., Providence.	Mech.	In charge of Production Dept., Maxwell-Briscoe Motor Co.
MAXSON, RALPH NELSON . . . Ph. D., Yale University, 1905. 366 Transylvania Park, Lexington, Ky.	Chem.	Professor Inorganic Chemistry, State University.
PITKIN, ROBERT WILLIAM . . . Rockville, Conn., R. F. D. No. 1.	Mech.	Farmer.

## 1903.

BARBER, KATE GRACE (MRS. A. L. WINTON) . . . Ph. D., Yale University, 1906. 1607 Transportation Bldg., Chicago, Ill.	Gen. Sci.	Investigations in Vegetable Histo- logy.
CONANT, WALTER AIKEN . . . Temple, N. H.	Agr.	Dairying, The Conant and Clem- ent Farms, Hillsboro County.
GODDARD, WARREN, JR. . . . Graduate, New Church Theo- logical School, 1907. 905 Linwood St., La Porte, Indiana.	Mech.	Pastor, New Church.
KEEFER, EDITH CECILIA . . . 63 West 48th St., N. Y. City.	Biol.	Teacher of Mathematics, Miss Spence's School.
KENT, RAYMOND WARREN . . . A. M., Harvard University, 1904. 171 Dodge Ave., Akron, Ohio.	Chem.	Chemist, The Sweinhart Tire and Rubber Co.
TEFFT, ERNEST ALLEN . . . 36 Pratt St., Providence.	El. Eng.	Electrical Contractor.

## 1904.

BALLOU, WILLARD ALGER . . . 332 Lafayette Ave., Brooklyn, N. Y.	Biol.	Instructor in Mathematics, Pratt Institute.
QUINN, MARY LOUISE . . . 7 Chase St., Cumberland, Md.	Biol.	Teacher of Science, Allegany Co. High School.
RODMAN, WALTER SHELDON . . . M. S., R. I. C. A. & M. A., 1907. M. S., Mass. Inst. Tech., 1909. 1201 W. Main St., University, Va.	El. Eng.	Adjunct Professor of Electrical Engineering, University of Virginia.

## 1905.

CHAMPLIN, SARAH ELIZABETH . . . 63 Carolina Ave., Providence.	Gen. Sci.	Bookkeeper, Burt Mfg. Co., 226 Eddy St.
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NAME AND ADDRESS.	COURSE.	OCCUPATION.
DOW, VICTOR WELLS . . . 6 Tyler St., Hampton, Va.	High. Eng.	Draftsman, Hampton Institute.
GILMAN, JEAN . . . .	High. Eng.	Assistant to Director of Trade School, Hampton Institute.
HARRALL, NELLIE ARMSTRONG . Graduate, Sargent School of Physical Education, 1909. Kingston.	Gen. Sci.	Instructor in Physical Training, R. I. S. C.

## 1906.

ARNOLD, BENJAMIN HOWARD . . 432 W. 7th St., Erie, Pa.	El. Eng.	Gas Engine Engineer, General Elec- tric Co.
BERRY, WALLACE NOYES . . .	El. Eng.	With Albuquerque Gas, Electric Light and Power Co.
ELKINS, MARION GRAHAM . . . Ph. D., Yale University, 1912. 10 Moody St., Amesbury, Mass.	Gen. Sci.	At home.
HARDING, LEE LAPLACE . . .	High. Eng.	Instructor in Mathematics, Fitch- burg High School.
KEYES, FREDERICK GEORGE . . . Sc. M., Brown Univ., 1907. Ph. D., Brown Univ., 1909. Boston, Mass.	Chem.	Instructor in Theo. Chem. and Re- search Associate in Research Laboratory, Mass. Institute of Technology.
NICHOLS, HOWARD MARTIN . . . Hyde Park, Mass.	El. Eng.	Assistant Engineer, B. F. Sturte- vant Co.
SISSON, CORA EDNA . . . .	Gen. Sci.	Instructor in Biology, Ulster Academy.
WILKINSON, ALBERT EDMUND . . . 309 Stewart Ave., Ithaca, N. Y.	Agr.	Instructor and Investigator in Hor- ticulture, Cornell University.

## 1907.

BARBER, ARTHUR HOUGHTON Boston, Mass.	Mech. Eng.	In business.
COGGINS, CALVIN LESTER . . . 132 West 93rd St., New York City.	El. Eng.	Instructor in Physics, Stevens Institute of Technology, Hoboken, N. J.
FERRY, Jay RUSSELL . . . .	High Eng.	Draughtsman, American Bridge Co., New York City.



NAME AND ADDRESS.	COURSE.	OCCUPATION.
KELLOGG, DAVID RAYMOND . . . Ph. D., Ohio State University, 1912. 506 Custom House, San Francisco, Cal.	Chem.	Asst. Physical Chemist, Bureau of Mines.
KENDRICK, WINFIELD SMITH . . . 34 Wendell Ave., Schenectady, N. Y.	El. Eng.	Sales Engineer, General Electric Co.
LAMOND, JOHN KENYON . . . M. A., Yale Univ., 1908. Ph. D., Yale Univ., 1910. 5 Stowe Ave., Middletown, Conn.	El. Eng.	Instructor in Mathematics, Wes- leyan University.
LEWIS, HARRY REYNOLDS . . . 17 Jones Ave., New Brunswick, N. J.	Agr.	Professor, Dairying and Poultry Husbandry, Rutgers College.
MACOMBER, MINER SANFORD . . . 50 East 41st St., New York City.	Chem.	Chemist.
TUCKER, ETHEL ALDRICH . . . Kingston.	Gen. Sci.	Primary Teacher, Lippitt Hill School, Hope, R. F. D.

## 1908.

DREW, JOSEPH DRAKE . . . 2010 Avenue H, Ensley, Alabama.	Chem.	Chemist, Tenn. Coal, Iron & R. R. Co.
FIELD, CLESSON HERBERT . . . C. E., Lehigh Univ., 1909. 516 Elmwood Ave., Buffalo, N. Y.	Civ. Eng.	With Designing and Estimating Dept., Schuylkill Bridge Works.
FISKE, HERBERT ANDREW . . . 49 Sycamore St., New Bedford, Mass.	El. Eng.	Automobile Instructor.
GARDINER, ROBERT FRANKLIN . . . 1223 Irving St., Washington, D. C.	Chem.	Asst. Chemist, Bureau of Soils, U. S. Dept. of Agriculture.
GORY, EDWARD ALLEN . . . 312 Shawmut Ave., Boston, Mass.	El. Eng.	Electrical Repair Work.
KENYON, SUSAN ELNORA (MRS. FRED K. CRANDALL) . . . Arcadia.	Biol.	At home.
MITCHELL, CLOVIS WILLIAM . . . 248 Montauk Ave., New Lon- don, Conn.	Civ. Eng.	Teacher, Mathematics and Sci- ence, Manual Training High School.
ROSE, ORPHA LILLIE . . . Peace Dale, R. F. D.	Gen. Sci.	Teacher.
SHELDON, GEORGE WARE . . . 58 James St., Newark, N. J.	El. Eng.	With Westinghouse Electric Mfg. Co.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
SHERMAN, MARY ALBRO . . . Lehigh Hill, Portsmouth.	Agr.	Teacher, R. F. D., West Kingston.
SMITH, JOHN LEBROC . . . 148 Magnolia St., Auburn.	El. Eng.	Head of Science Dept., Cranston High School.
WHIPPLE, LUCIUS ALBERT . . . Pawtucket.	Civ. Eng.	Teacher, Mathematics and Physical Science, High School.

## 1909.

CARGILL, RHOBIE LUCELIA . . . Abbott Run.	Appl. Sci.	Teacher of Science and Mathematics, High School, 51 School St., Groveland, Mass.
CRAIG, JAMES MCINTYRE . . . Arsenida de Mayo, 605 Buenos Aires, Argentine.	Agr.	Gardener.
CRANDALL, FRED KENYON . . . Arcadia.	Agr.	Teacher.
FRENCH, HENRY FRANK . . . 81 Park St., Lynn, Mass.	El. Eng.	Research Engineer, General Electric Co.
HOWE, ALBERT MENDEL . . . 305 Copeland St., Campello, Mass.	El. Eng.	Inspector, Repair Dept., Bay State St. Ry. Co.
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LEE, ALFRED ROGERS . . . Washington, D. C.	Agr.	Junior Animal Husbandman, in Poultry Investigations, Bureau of Animal Industry, U. S. Dept. of Agriculture.
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SMITH, ELMER FRANCIS . . . 311 Chestnut St., Roselle Park, N. J.	El. Eng.	Principal, Roselle Park High School.
TISDALE, HARRY ROBERT . . . Mass. Inst. Technology, 1911, Box 263, New London, Conn.	Chem.	Chemist, Brainerd & Armstrong, Silk M'f'rs.
TUCKER, ELLEN CAPRON . . . Kingston.	Gen. Sci.	Teacher.

## 1910.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
BURGESS, PAUL STEERE . . . M. S., University of Illinois, 1911; Faculty Club, Berkeley, Cal.	Chem. Eng.	Instructor in Soil Bacteriology and Chemistry, University of California; Asst. Soil Bacteriologist, Experiment Station.
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HEATH, BERTHA MAY . . . . Lunenburg, Mass.	Agr.	Teacher, Kingston, R. I.
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LAMOND, HELEN SCOTT . . . Usquepaug.	Gen. Sci.	Teacher, Kenyon.
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PEABODY, GEORGE ABBOTT . . Newnan, Ga.	El. Eng.	Electrical Test Engineer, with General Electric Co.
SHERMAN, JOHN LELAND . . . Manchester, Vt.	Agr.	County Agent, U. S. Dept. of Agriculture.
SMITH, HIRAM JAMESON . . . 200 Park Ave., Woonsocket.	Civ. Eng.	In Engineering Dept., Grand Trunk Railway System.
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WORRALL, DAVID ELBRIDGE . . M. A., Harvard Univ., 1911. 12 Oxford St., Cambridge, Mass.	Chem.	Austin Teaching Fellow and Graduate Student, Harvard University.

## 1911.

ANDREWS, CARMEN NICHOLS . . Slocum.	Appl. Sci.	Teacher.
ANGILLY, CHARLES ENOCH, JR. Manila, P. I.	Civ. Eng.	Second Lieutenant, Philippine Constabulary.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
EASTERBROOKS, HAROLD ARNOLD 280 Benefit St., Providence.	Biol.	With Rhode Island Agricultural Co.
EASTERBROOKS, LOUIS CHURCH 280 Benefit St., Providence.	Agr.	With Rhode Island Agricultural Co.
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HARRIS, BURTON KENNETH . Lime Rock.	Chem. Eng.	Sales Agent and Chemist for Lime Manufacturer.
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MINOR, ARTHUR JACOB . . Concord, N. H.	Civ. Eng.	In Maintenance of Way Dept., Boston & Maine R. R.
NEAL, WILLIAM THOMAS . . . Walton, New York.	Agr.	Proprietor Tripp Greenhouse Company.
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RUPRECHT, RUDOLF WILLIAM . 32 N. Prospect St., Amherst, Mass.	Appl. Sci.	Asst. Research Chemist, Agr. Experiment Station.
SAFFORD, HOWARD ALBERT . . . 113 Providence St., Providence.	Agr.	With Rhode Island Agricultural Co.
TUCKER, HARRIET TABER . West Kingston.	Gen. Sci.	Teacher, Primary Grades.
WADE, CEYLON RAYMOND . . 26 Walnut St., Waterbury, Conn.	Civ. Eng.	With Real Estate Dept., N. Y., N. H. & H. R. R. Co.

## 1912.

BARLOW, HENRY NEWELL . Bachelor Hall, Wilkinsburg, Pa.	Elec. Eng.	Engineering Apprentice, Westinghouse Electric and Manufacturing Co.
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CALDWELL, DOROTHY WALCOTT, Kingston.	Civ. Eng.	Assistant in Bacteriology, Experiment Station, R. I. S. C.
CLARKE, PHILIP HARRISON . 850 Emmett St., Schenectady, N. Y.	Elec. Eng.	Electrical Test Engineer, General Electric Co.
COBB, ELECTRA HENRIETTA . Howardsville, Va.	Home Econ.	Assistant Dietitian, Tewksbury, Mass.

NAME.	COURSE.	OCCUPATION.
DOLL, WALTER . . . . Keokuk, Iowa.	Mech. Eng.	Draftsman on Hydro-Electric Power Plant, Stone & Webster Eng. Corp.
HENDERSON, ETHEL PIERCE . . Westerly.	Appl. Sci.	Chemist, Bradford Dyeing Works, Bradford.
KENYON, ANNIE ELIZA . . . Usquepaug.	Appl. Sci.	Teacher.
LARKIN, CHARLES HERBERT . . 35 Hancock St., Boston, Mass.	Civ. Eng.	Draftsman, Engineering Dept., Boston & Maine R. R.
NUTTING, BERTHA MAY . . Lititz, Pa.	Home Econ.	Student, Sargent School of Physical Education.
PATTERSON, ARTHUR JACOB . . Rochester, N. Y.	Elec. Eng.	With Hall Switch and Signal Co., Garwood, N. J.
RICHMOND, FRED ALLEN . . 1025 Delamont Ave., Schenectady, N. Y.	Elec. Eng.	Electrical Test Engineer, General Electric Co.
SHERMAN, GEORGE WILLIAM, JR., 21 University St., West Lafayette, Ind.	Elec. Eng.	Instructor in Electric Measure- ments and Graduate Student, Purdue University.
SLATER, ALLAE CORDELIA . . (Mrs. ARTHUR J. MINOR), Concord, N. H.	Home Econ.	At home.
WARNER, DAVID EDMOND, JR., . . State College, Pa.	Agr.	Assistant Instructor in Poultry Husbandry.
WEBSTER, SAMUEL C., JR., . . . Cohasset, Mass.	Agr.	Treasurer, The Oaks Farm.
WHALEN, WILLIAM JOSEPH, . . Kingston.	Appl. Sci.	Asst., Buildings Dept., R. I. S. C.

## Advanced Degrees.

### MASTER OF SCIENCE.

#### 1907.

RODMAN, WALTER SHELDON (B. S., R. I. State College, 1904). University, Va.	Adjunct Professor of Electrical Engineering, University of Vir- ginia.
--	--

#### 1910.

WHITING, ALBERT LEMUEL (B. S., Mass. Agr. College, 1908). Ph. D., University of Illinois, 1912. 905 West Illinois St., Urbana, Illinois.	Instructor in Soil Biology; and First Asst. in Soil Biology in Experiment Station, University of Illinois.
--	---

#### 1911.

HAMMETT, FREDERICK SIMONS (A. B., Tufts College, 1908). Cambridge, Mass.	Graduate Student, Harvard Uni- versity.
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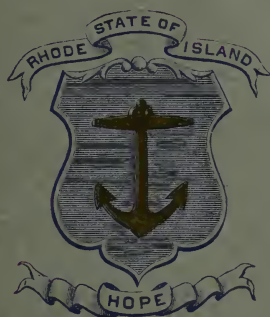


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15-14  
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VOL. X. NO. 1.

FOR MAY, 1914.

## CATALOGUE OF THE COLLEGE.



KINGSTON, R. I.

1914.

PUBLISHED QUARTERLY BY THE COLLEGE.

MAY, AUGUST, NOVEMBER, FEBRUARY.

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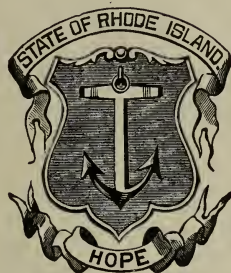
# BULLETIN OF RHODE ISLAND STATE COLLEGE

VOL. X. NO. 1

FOR MAY, 1914

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## CATALOGUE OF THE COLLEGE



KINGSTON, RHODE ISLAND

1913-14

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PUBLISHED QUARTERLY BY THE COLLEGE

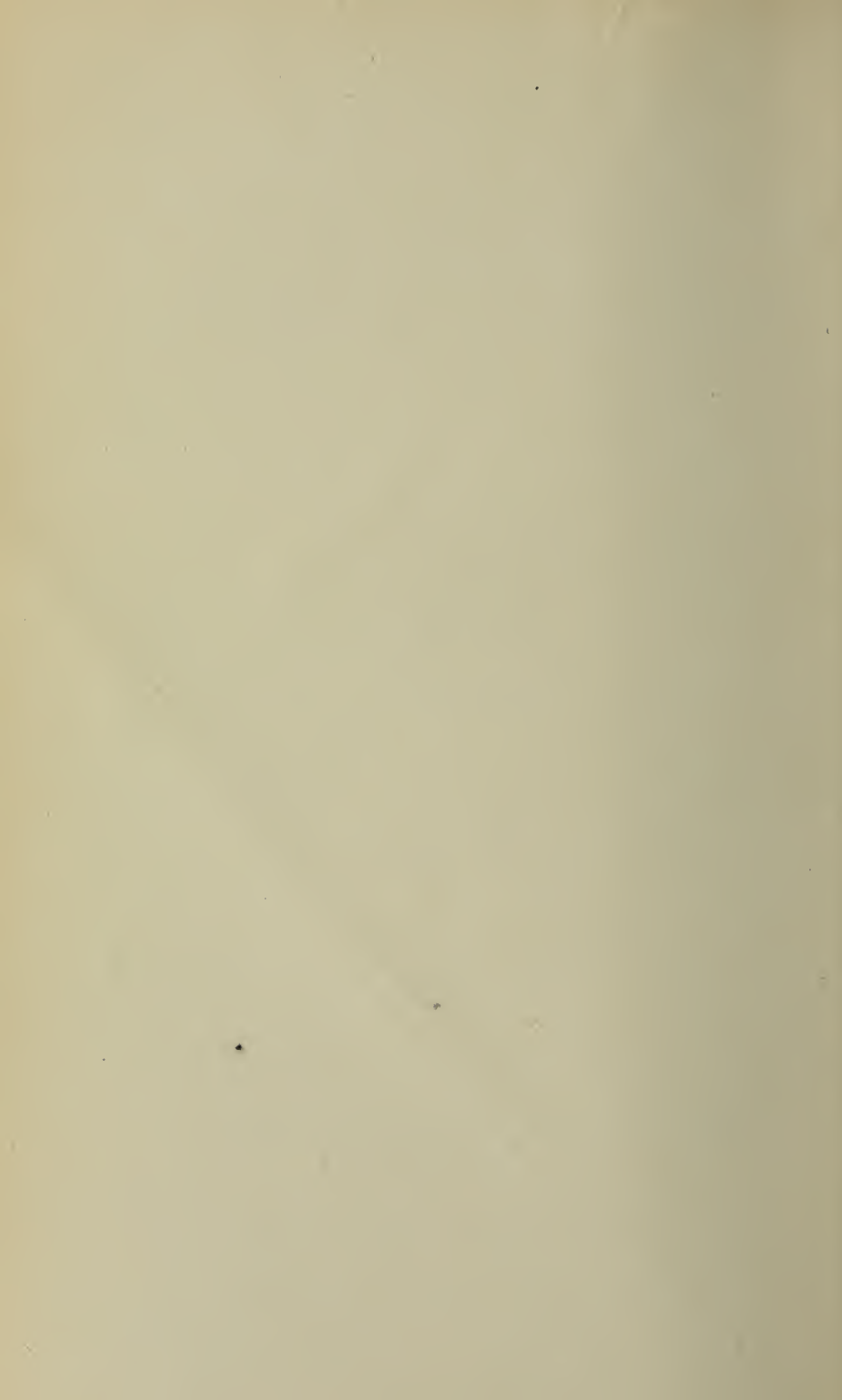
MAY, AUGUST, NOVEMBER, FEBRUARY

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## Rhode Island State College.

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*Instructor in Languages.*

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*Bursar.*

JENNIE CRANDALL THOMPSON,

*Bookkeeper.*

GERTRUDE MABEL BURDICK,

*Bookkeeper.*

## Lectures.

### Poultry Course, 1914.

---

- F. W. C. Almy, Tiverton, Four Corners, R. I., THE COLONY SYSTEM OF POULTRY KEEPING. One lecture.
- Howland Burdick, Kingston, R. I., DEMONSTRATION OF ROPE TYING. CLEAN MILK. Two lectures.
- E. W. Brown, Old Mystic, Conn., PRACTICAL POULTRY KEEPING. One lecture.
- A. C. Goddard, Kingston, R. I., COCCIDIOSIS IN TURKEYS AND OTHER POULTRY.
- Dr. P. B. Hadley, Kingston, R. I., MENDELISM AND MENDELIAN INHERITANCE IN POULTRY. Two lectures.
- William F. Kirkpatrick, Storrs, Conn., EGG LAYING CONTESTS, PREVENTION OF WHITE DIARRHOEA IN CHICKENS. Two lectures.
- Harry R. Lewis, New Brunswick, N. J., POULTRY HOUSES, EGG PRODUCTION. Two lectures.
- C. H. Magoon, Kingston, R. I., THE EXPERIMENT STATION POULTRY DEPARTMENT, ITS WORK AND RELATION TO THE POULTRYMEN OF THE STATE. Two lectures.
- J. A. Kiernan, East Providence, R. I., PIGEONS AND SQUABS. One lecture.
- H. W. Rickey, Lexington, Ky., INCUBATION, BROODING, FEEDING YOUNG CHICKENS. Six lectures.
- Henry D. Smith, Rockland, Mass., CAPONS AND CAPONIZING. Two lectures and demonstration.
- George V. Smith, West Wellington, Conn., RECENT ADVANCES IN POULTRY HUSBANDRY.
- Sayles B. Steere, Chepachet, R. I., POULTRY RAISING WITH FRUIT CULTURE.
- 

### Farmers' Week.

- William M. Craig, Brookline, Mass., HOME VEGETABLE GARDEN.
- Maurice E. Kent, Slocums, R. I., USE OF ROPE ON THE FARM.
- Glenn C. Sevey, Springfield, Mass., EVILS OF OUR MARKETING SYSTEM.
- J. Lewis Ellsworth, Boston, Mass., A STUDY OF AGRICULTURAL CREDITS IN EUROPE.
- Edward Van Alstyne, Albany, N. Y., SHEEP INDUSTRY OF THE EAST.
- Dr. H. J. Shore, Washington, D. C., HOG CHOLERA.
- H. W. Heaton, Providence, R. I., SOME FARM PROBLEMS.

## Experiment Station Staff.

---

HOWARD EDWARDS, M. A., LL. D. ....	{ President of the College. Ex officio Member.
BURT L. HARTWELL, PH. D., Director. ....	Agronomy, Chemistry.
PHILIP B. HADLEY, PH. D. ....	Animal Breeding and Pathology.
F. R. PEMBER, M. S. ....	Assistant, Glass-House Experiments.
S. C. DAMON, B. S. ....	Assistant, Field Experiments.
P. H. WESSELS, M. S. ....	Assistant, Chemistry.
ROBERT A. LICHTENTHAELER, M. S. ....	Assistant, Chemistry.
F. O. FITTS, B. S. ....	Assistant, Chemistry.
G. E. MERKLE, B. S. ....	Assistant, Chemistry.
L. S. CROSBY, A. B. ....	Assistant, Chemistry.
DOROTHY W. CALDWELL, B. S. ....	Assistant, Animal Breeding and Pathology.
CARROLL H. MAGOON. ....	Poultryman.
NATHANIEL HELME. ....	Meteorologist.
E. ELIZABETH MEEARS. ....	Stenographer and Librarian.
M. ALICE KIMBALL. ....	Stenographer and Accountant.
H. ALIDA BIRCH. ....	Stenographer.

---

*The publications of the Station will be mailed free, upon request, to residents of Rhode Island. Suggestions as to how the Station can aid the State are gladly received. Visitors are always welcome. Railway station, telegraph, express, and post-office—Kingston, Rhode Island. Long distance telephone, Narragansett Pier Exchange.*



## College Calendar.

---

Tuesday, September 15, 1914.....	Assembly Exercises, 8:20 A. M.
*Registration, examination of entering and conditioned students, 9 A. M.	
Wednesday, September 16.....	Recitations begin 8:20 A. M.
Monday, October 12, holiday.....	Columbus Day.
Tuesday, November 3, holiday.....	Election Day.
Wednesday, November 25, 12 M. }	Thanksgiving Recess.
Monday, November 30, 8:20 A. M. }	
Wednesday, December 23, 4:35 P. M. }	Christmas Recess.
Monday, January 4, 1915, 8:20 A. M. }	
Tuesday to Friday, December 29, 30, 31, January 1.....	Farmers' Week.
Wednesday, February 3, 4:35 P. M.....	First Term Ends.
Tuesday, February 9.....	Second Term Begins.
*Registration, 9 A. M.	
Wednesday, February 10.....	Recitations begin 8:20 A. M.
Monday, February 22, holiday.....	Washington's Birthday.
Wednesday, March 31, 4:35 P. M. }	Easter Recess.
Monday, April 5, 8:20 A. M. }	
Friday, May 14, holiday.....	Arbor Day.
Monday, May 31, holiday.....	Memorial Day.
Sunday, June 13.....	Baccalaureate Address.
Tuesday, June 15.....	Commencement Exercises.

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\*Notice fee for late registration, page 31.







## RHODE ISLAND STATE COLLEGE.

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### Foundation.

The college is one of the so-called land-grant colleges. Of the purpose of these institutions Senator Morrill, the author of the national legislation which brought them into existence in all the states, says:

"The fundamental idea was to offer an opportunity in every state for a liberal and larger education to large numbers, not merely those destined to sedentary professions, but to those needing higher instruction for the world's business, for the industrial pursuits and professions of life." Again he says: "It was to give a chance to the industrial classes of the country to obtain a liberal education, something more than what was bestowed by our universities and colleges in general, which seemed to be based more on the English plan of giving education only to what might be called the professional classes, in law, medicine, and theology."

The college has also a well-defined investigative purpose in its experiment station, organized as a department of the college and endowed by the general government.

The resources of the college are as follows:

- (1) The interest on \$50,000, which was the net amount received by the state from the sale of its scrip for 120,000 acres of land, granted by the general government in 1862. This fund came to the college in 1894.
- (2) The annual appropriation of \$15,000 from the general government, under what is known as the Hatch Act of 1887. This fund is exclusively for experimental purposes.
- (3) The annual appropriation of \$25,000 from the general government under the second Morrill Act of 1890. This fund is for teaching the subjects distinctly named and specified in the act, as



follows: "to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

(4) The funds coming from the general government to the state under the Adams Act of 1906, yielding each year \$15,000. This fund is exclusively for experimental purposes.

(5) The funds from the general government under the Nelson Amendment of 1907, amounting yearly to \$25,000. This amendment is simply an extension of the 1890 Morrill grant and carries the same restrictions.

(6) The annual maintenance fund from the state, of \$30,000, used for all the purposes for which the funds of the general government can not be used: *e. g.*, for extension work; for executive and administrative work; for heating, lighting and maintenance of buildings; for the teaching of modern language other than English; for the teaching of history and civics; for student labor, maintenance of grounds, roads, etc.

The college was founded in 1888 as an agricultural school. In 1892 it was incorporated as a college. The courses of study have been on a college basis since 1892; the requirements for a degree were raised in 1898; and the curriculum was again thoroughly revised during the years 1906-07 and 1907-08. The course in home economics for young women was introduced in 1908.

## Object and Organization.

The function of the Rhode Island State College is to aid in fostering the industrial life of the state, at least in so far as pertains to agriculture, manufactures, transportation, and home-making. This it does in three ways: 1. By the investigation and discovery of new truth more or less directly applicable in the industries. 2. By the direct distribution of industrial information to the people. 3. By the organization and administration of definite courses of instruction designed to fit young men and young women for effective work in the industrial pursuits.

The first of these duties is performed by the

## Experiment Station,

for a description of the work of which the reader is referred to the report of the director, included in the report of the Board of Managers for the current year. A statement of its staff organization may be found on page 8 of this catalogue.

The experiment station takes part, also, in the second phase of the college activities, by distributing its bulletins to all that desire and apply for them. In order, however, more fully and directly to bring the college and its work into touch with the people, a

## College Extension Department,

has been organized, and is in active operation.

The purpose of this department is to carry the instruction of the college to those who cannot come to it for study. Whenever necessary and possible, visits will be made to any part of the state to examine farms, orchards, and gardens; to identify injurious insects or plant diseases, or give instruction in regard to methods of treatment; or to examine soils with a view to suggesting remedies for lack of fertility. General plans for laying out farms and for carrying out the details of any farm operation will be given the fullest consideration. The college is available for consultation at any time in regard to any problem of the farm, garden, or orchard. The fullest correspondence is invited, and conscientious consideration will be given to every letter received. In conjunction with this phase of the work, popular bulletins are issued from time to time, which endeavor to present the gist of agricultural information on various topics without the uninteresting detail of the usual experiment-station bulletin.

Whenever possible, arrangements will be made for demonstrations or lectures by members of the college faculty and experiment-station staff when called for by any agricultural meeting or neighborhood gathering. A number of lectures on various subjects has been prepared, which can be secured on short notice by any gathering or organization within the state. These lectures are free, the only charge being the traveling expenses of the speaker. A complete list of the lectures, together with such other information in regard to them as may be of interest, has been prepared and may be obtained by sending a postal-card request to the department.

An important part of this extension work is to be the encouragement of home study and the conducting of correspondence courses. For the present, time and funds will not permit the carrying out of this plan, but advice will be given to any person wishing to take up home study, regarding courses of reading, books, and other literature which may be necessary in connection with such work.

In an effort to interest the boys of the state in agriculture, a corn growing contest for boys was started three years ago and closed with a state exhibit of corn in the autumn. This contest work has now been enlarged to include adult classes in corn growing, and girls' classes in cooking, canning, and sewing, with an exhibition at the close of each season.

As a further aid to the development of a better agriculture, the extension department maintains the following lines of work for children:

1. NATURE STUDY.—This is encouraged through the publication of a little leaflet called the Nature Guard, and the organization of boys and girls in the schools and elsewhere into bands called Nature Guard bands, the purpose of which is to awaken in its members a livelier interest in the things of outdoor life. It endeavors to stimulate the powers of observation and to lay the foundation for a simple, rational education which shall give the individual a love for nature and a sympathy with his environment and furnish him with a means of making life more useful and more enjoyable, whether lived in the country or in the city.

2. CHILDREN'S GARDENS.—The extension department endeavors to aid schools and other organizations in carrying on children's gardens. An instructor is employed who gives a large part of his time to this work and who gives the children direct personal instruction in methods of preparing the ground, planting, cultivating, and harvesting garden crops. Home gardens are also encouraged, and advice given through correspondence and by circulars about the best methods of cultivating garden crops.

3. AGRICULTURE IN THE PUBLIC SCHOOLS.—Assistance is given as far as possible to school authorities who wish to introduce agriculture into the schools. This has taken the form of suggestions as to books to be used, and in regard to outlines for the work to be done. Whenever possible, representatives of the college are sent to consult with the superintendents and teachers, and to give lectures on topics connected with the courses given.

Further notes in regard to this work are given in leaflets and circulars issued by the extension department, and correspondence from anyone who may be interested therein is invited.

### Engineering Extension Work.

In the Engineering Department as well as in the other branches of the College, the endeavor is to be of the greatest possible service to the people of the state, not only in the matter of providing formal instruction to students coming to the college, but also in giving help and information to those outside the college enrollment who are desirous of extending their technical knowledge, and to whom, for one reason or another, a regular college course is impossible.

To this end there has been offered in the past a short course of two years' duration in which instruction has been given in the elements of engineering. Experience, however, has shown that those most eager to avail themselves of this kind of instruction, and those who would be most helped by it, were unable to leave their regular duties to attend classes at the college.

As a consequence, the short course work in engineering at the college has been discontinued, and in its place has been inaugurated the plan of Extension Work in Engineering. Instead of taking the man away from his regular duties to bring him to the work, the present plan is to carry the work to the man.

This extension work is carried out in two chief ways,—by means of separate lectures on specific topics, and by means of progressive study in organized classes. The subjects presented are all of a technical character and are adapted to the particular needs and capabilities of the classes.

The present requirements for such class work are that a suitable place for meeting be provided, and that the attendance be regular. This regularity of attendance is a matter of the greatest importance, since without it little or no progress is possible.

Classes are now being conducted in various places in The Use of the Slide Rule, Mechanism and Shop Calculations, Power Plant Computations, etc. Instruction in these and any other desired branch of engineering may be had by citizens of the state by complying with the requirements mentioned, the number of such courses being limited only by the available time of the members of the department. Also lecturers will be provided to present various phases of engineering before technical organizations and engineering societies.



## The College as an Educational Agency.

In its third form of activity, the purpose and work of the Rhode Island State College is to give college training and culture to young men and young women, not in spite of, but through and with vocational studies. Its courses are intended, first of all, to make the student a self-supporting unit in society, a positive force for social advancement, able and willing not only to maintain himself, but also to carry something of the common social burdens that always weigh upon the thoroughly efficient worker.

### I. THE FOUR-YEAR COURSES.

To this end certain college courses, intended to fit men and women for efficiency and leadership in well-defined life-activities, have been prepared. These courses are all founded upon training in mathematics, pure and applied; the English language as a means of intercommunication; and the sciences that deal with matter, force, and life as applied more directly to agriculture, the mechanic arts, and home economics. In the pursuit of these vocational studies, the effort is to accumulate an array of knowledge that, in the activities of industrial life, must be always practically serviceable, and, at the same time, to gain a disciplinary training both of brain and of muscle and nerve that make for practical effectiveness. These courses, moreover, recognizing that a college course should include not only intellectual training and the knowledge and skill requisite for bread-winning, but also preparation for citizenship, for moral and social life, have intertwined with the vocational work and study previously mentioned, the subjects that most directly make for culture and morality—history, economics, literature, languages, ethics, psychology, and sociology. These are ranked as of equal importance with the bread-winning studies.

The college courses just discussed are four years in length, and base themselves directly on the work of the four years of the high schools. They thus become an integral part of the school system of the state. Young men and young women, citizens of the state and having requisite high-school training, are admitted to these courses without charge for tuition.

The four-year courses thus offered are the agricultural course, the engineering course, the teachers' course in applied science, and the course in home economics.



## The Agricultural Course.

The agricultural course is intended to give thorough preparation for taking charge of and operating a piece of landed property. Its work is centered around instruction and practice in horticulture, general farming, and animal husbandry (more especially as applied to dairying and the poultry industry). The course consists of practical work combined with thorough study of the sciences bearing directly on such work, viz.: botany, chemistry, geology, zoölogy, anatomy, physics, bacteriology, and entomology. In addition, it embraces the culture and mental discipline arising from the study of mathematics, English composition and rhetoric, history, drawing, modern languages, economics, and English literature. The course is planned to give the student a full and rounded development as worker, as citizen, and as man.

All agricultural students will follow the same work in the first year; in the Sophomore year, one elective is offered; in the second half of the Junior year, in addition to the required work for all students in the course, two optional lines of work are offered, one of which must be selected by the student and followed until graduation. The two lines offered are horticulture and animal husbandry. No option and no subject will be given for which a number of students sufficient to warrant giving it has not applied. The tabulated course follows:

### Freshman Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I) . . .	3	Rhetoric and Composition (English I) . . .	3
German or French (I or II) . . . . .	3	German or French (I or II) . . . . .	3
Algebra (Math. I), Trigonometry (Math. II) . . . . .	5	General Chemistry and Qualitative Analysis (Chem. II) . . . . .	3 [1½]
General Chemistry (Chem. I) . . . . .	2 [1½]	General Botany (Botany I) . . . . .	1 [2]
General Botany (Botany I) . . . . .	1 [2]	Stock Judging (An. Husb. I) . . . . .	2
Propagation of Plants, (Hort. I) . . . . .	1 [1]	Breeds (An. Husb. III) . . . . .	2
Drawing, Pencil (Fr. Dr. II) . . . . .	1	Spraying and Pruning (Hort. IV) . . . . .	1 [1]
How to Study (Psy. and Ed. VIII) . . . . .	½	Vegetable Gardening (Hort. II) . . . . .	2
Drill (Mil. Sci. and T. I) . . . . .	[1]	Drill (Mil. Sci. and T. I) . . . . .	[1]
Theory (Mil. Sci. and T. II) . . . . .	½	Theory (Mil. Sci. and T. II) . . . . .	½

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II) . . . . .	1	Argumentation (English III) . . . . .	2
Interpretive Reading (English VIII) . . . . .	1	German or French (II) . . . . .	3
German or French (II) . . . . .	3	Agricultural Chemistry (Chem. XIV) . . . . .	3 [1]
Organic Chemistry (Chem. IV) . . . . .	3 [1]	Descriptive Physics (Physics I) . . . . .	5
Botany of Crops and Weeds (Bot. II) . . . . .	1 [2]	Physiology (Zoöl. III) . . . . .	3 [1]
General Zoölogy (Zoöl. I) . . . . .	2 [2]	Geology (Geology I) . . . . .	2
Surveying (Civ. Eng. I) . . . . .	1 [2]	Drill (Mil. Sci. and T. I) . . . . .	[1]
Drill (Mil. Sci. and T. I) . . . . .	[1]		
{ Forage Plants (Agron. II) . . . . .	2		
or			
{ Arboriculture (Hort. XIV) . . . . .	1 [1]		

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern Essays (English IV).....	4	Debating (English IX).....	1
Debating (English IX).....	1	Industrial History (History I).....	4
Vet. Medicine (An. Husb. X).....	3	Farm Crops (Agron. IV).....	3 [1]
Soils and Fertilizers (Agron. III).....	4 [1½]	Farm Management (Agron. VII).....	2
Landscape Gardening (Hort. XVI).....	1 [2]	Drill (Mil. Sci. and T. I).....	[1]
Fruit Culture (Hort. II).....	2	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½
Drill (Mil. Sci. and T. I).....	[1]	Options: A, B.	
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	All of the subjects in one of the following groups must be chosen:	
		<i>A. Horticulture.</i>	
		Forestry (Botany IV) or Tree Surgery (Hort. XV).....	2
		Economic Entomology (Zool. IV).....	3 [1]
		Elective.....	3
		<i>B. Animal Husbandry.</i>	
		Dairy Practice (An. Husb. VII).....	1 [2]
		Farm Machinery (Agron. VI).....	2 [1]
		Elective.....	3

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I).....	2 ½	Civil Government (History II).....	1 ½
Civil Government (History II).....	1 ½	Shakspeare (English V).....	2 ½
Oratorical Writing and Extemporaneous Speaking (English X).....	1	Oratorical Writing and Extemporaneous Speaking (English X).....	1
Agricultural Experimentation (Agron. X).....	3	Feeds and Feeding (An. Husb. VI).....	3
Plant Breeding (Agron. XI).....	3	Bacteriology I.....	1 [2]
General Bacteriology (Bact. I).....	1 [2]	Drill (Mil. Sci. and T. I).....	[1]
Drill (Mil. Sci. and T. I).....	[1]	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Options: A, B.	
Elective.....	3	All of the subjects in one of the following groups must be chosen:	
		<i>A. Horticulture.</i>	
		Forestry (Botany IV) or Tree Surgery (Hort. XV).....	2
		Elective.....	9
		<i>B. Animal Husbandry.</i>	
		Breeding (An. Husb. IV).....	3
		Elective.....	8

## The Engineering Course.

The engineering course has the same duration and the same general plan as that usually offered in the standard technical colleges. Students will follow the course as laid down until the second half of the Sophomore year, at which time they must elect one of the four optional lines offered, viz.: mechanical, electrical, civil, and chemical engineering. Any line of work for which the number of applicants is insufficient to warrant giving it, the college reserves the right to withdraw.

The course is arranged to prepare young men for skilled and efficient work in the great manufacturing and commercial industries of the state; in the development of electricity as a motive force and in its thousand-fold other applications to the arts and to the life of society; in the activities of the new road-building era upon which

we are entering; and in the applications of chemistry as now found in the great industrial establishments. At the same time, in this as in all other courses, it is not forgotten that the man is not a mere lever in his own machinery, and the effort after breadth and completeness of life is steadily maintained. The tabulated course follows:

### Freshman Year.

For the first year the course is the same for all students of engineering.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I)...	3	Rhetoric and Composition (English I)...	3
German or French (I or II).....	3	German or French (I or II).....	3
Algebra (Math. I), Trigonometry (Math. II).....	5	Analytics (Math. VIIIA).....	5
General Chemistry (Chem. I).....	2 [1½]	General Chemistry and Qualitative Analysis (Chem. II).....	3 [1½]
Mechanical Drawing (Mech. Eng. I)...	[3]	Mechanical Drawing (Mech. Eng. I)...	[2]
Forge and Foundry (Mech. Eng. II)...	[3]	Pattern Making (Mech. Eng. III).....	[3]
How to Study (Psy. and Ed. VIII).....	½	Drill (Mil. Sci. and T. I).....	[1]
Drill (Mil. Sci. and T. I).....	[1]	Theory (Mil. Sci. and T. II).....	½
Theory (Mil. Sci. and T. II).....	½		

### MECHANICAL ENGINEERING.

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	2
Interpretive Reading (English VIII)...	1	General Physics (Physics II).....	4
Qualitative Analysis (Chem. III).....	[3]	Laboratory (Physics III).....	[1½]
General Physics (Physics II).....	4	Calculus (Math. XI).....	5
Laboratory (Physics III).....	[1½]	Graphic Statics (Mech. Eng. IV).....	2
Calculus (Math. X).....	5	Mechanical Drawing (Mech. Eng. VI)...	[3]
Descriptive Geometry (Mech. Eng. V)...	1 [2]	Mechanism (Mech. Eng. XII).....	3
Surveying (Civ. Eng. I).....	1 [2]	Drill (Mil. Sci. and T. I).....	[1]
Drill (Mil. Sci. and T. I).....	[1]		

### Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern Essays (English IV).....	4	Debating (English IX).....	1
Debating (English IX).....	1	Industrial History (History I).....	4
Heat Engineering (Mech. Eng. IX)...	3	Heat Engineering (Mech. Eng. IX)...	3
Applied Mechanics (Mech. Eng. X)...	5	Applied Mechanics (Mech. Eng. X), Hydraulics (Mech. Eng. XI).....	5
Machine Drafting (Mech. Eng. VIII)...	[3]	Valve Gears (Mech. Eng. XIII).....	3
Machine Shop (Mech. Eng. XIV).....	[3]	Machine Shop (Mech. Eng. XIV).....	[3]
Experimental Engineering a (Mech. Eng. XV).....	[2]	Experimental Engineering b (Mech. Eng. XVI).....	[2]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½

### Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), Civil Government (History II).....	4	Civil Government (History II), Shakspeare (English V).....	4
Oratorical Writing and Extemporaneous Speaking (English X).....	1	Oratorical Writing and Extemporaneous Speaking (English X).....	1
Experimental Engineering c (Mech. Eng. XVII).....	2 [2]	Experimental Engineering d (Mech. Eng. XVIII).....	[2]
Machine Design (Mech. Eng. XX).....	[3]		

FIRST TERM.	CREDITS	SECOND TERM.	CREDITS.
Power Plants and Design (Mech. Eng. XXI).....	2 [1]	Machine Design (Mech. Eng. XX).....	[3]
Assigned Work (Mech. Eng. XXII)....	3	Heating and Ventilation (Mech. Eng. XIX).....	1
Theory of Direct Currents (El. Eng. I)...	3	Assigned Work (Mech. Eng. XXII)....	3
Drill (Mil. Sci. and T. I).....	[1]	Theory of Alternating Currents (El. Eng. IV).....	2
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Dynamics of Machines (Mech. Eng. XXIII).....	2
		Works Management (Mech. Eng. XXIV).....	1
		Direct Current Laboratory (El. Eng. II).....	[3]
		Drill (Mil. Sci. and T. I).....	[1]
		Theory for Commissioned Officers (Mil. Sci. and T. III).....	½

## ELECTRICAL ENGINEERING.

## Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	2
Interpretive Reading (English VIII)...	1	General Physics (Physics II).....	4
Qualitative Analysis (Chem. III).....	[3]	Laboratory (Physics III).....	[1½]
General Physics (Physics II).....	4	Calculus (Math. XI).....	5
Laboratory (Physics III).....	[1½]	Graphic Statics (Mech. Eng. IV).....	2
Calculus (Math. X).....	5	Mechanical Drawing (Mech. Eng. VI)...	[3]
Descriptive Geometry (Mech. Eng. V)...	1 [2]	Machine Shop (Mech. Eng. VII).....	[3]
Surveying (Civ. Eng. I).....	1 [2]	Principles of Elect. Eng. (El. Eng. IIIa)...	½
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern Essays (English IV).....	4	Debating (English IX).....	1
Debating (English IX).....	1	Industrial History (History I).....	4
Theory of Direct Currents (El. Eng. I)...	3	Direct Current Laboratory (El. Eng. II)...	[3]
Principles of Elect. Eng. (El. Eng. IIIb)...	1	Theory of Alternating Currents (El. Eng. IV).....	2
Electrical Measurements. (Physics V)...	[1½]	Heat Engineering (Mech. Eng. IX)....	3
Heat Engineering (Mech. Eng. IX)....	3	Applied Mechanics (Mech. Eng. X), 1½,	5
Applied Mechanics (Mech. Eng. X)....	5	Hydraulics (Mech. Eng. XI), 3½.....	5
Experimental Engineering a (Mech. Eng. XV).....	[2]	Experimental Engineering b (Mech. Eng. XVI).....	[2]
Principles of Illumination (Physics VI)...	1 [1½]	Drill (Mil. Sci. and T. I).....	[1]
Drill (Mil. Sci. and T. I).....	[1]	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½		

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), 2½,		Civil Government (History II), 1½,	
Civil Government (History II), 1½.....	4	Shakspeare (English V), 2½.....	4
Oratorical Writing and Extemporaneous Speaking (English X).....	1	Oratorical Writing and Extemporaneous Speaking (English X).....	1
Theory of Alternating Currents (El. Eng. V).....	3	Theory of Alternating Currents (El. Eng. V).....	3
Alternating-Current Laboratory (El. Eng. VI).....	[3]	Alternating Current Laboratory (El. Eng. VI).....	[3]
Telephone Engineering (El. Eng. VIII)...	1	Design of Electrical Machinery (El. Eng. VII).....	[3]
Assigned Work (El. Eng. XII).....	[3]	Electric-Railway Engineering (El. Eng. XI).....	2
Experimental Engineering c (Mech. Eng. XVII).....	2 [2]	Assigned Work (El. Eng. XII).....	[3]
Transmission of Energy (El. Eng. X)...	2	Drill (Mil. Sci. and T. I).....	[1]
Power Plants (Mech. Eng. XXI).....	2	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½
Drill (Mil. Sci. and T. I).....	[1]		
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½		



## CIVIL ENGINEERING.

## Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	2
Interpretive Reading (Eng. VIII).....	1	General Physics (Physics II).....	4
Qualitative Analysis (Chem. III).....	[3]	Laboratory (Physics III).....	[1½]
General Physics (Physics II).....	4	Calculus completed (Math. XI).....	5
Laboratory (Physics III).....	[1½]	Graphic Statics (Mech. Eng. IV).....	2
Calculus (Math. X).....	5	Mechanical Drawing (Mech. Eng. VI)...	[3]
Descriptive Geometry (Mech. Eng. V)...	1 [2]	Machine Shop (Mech. Eng. VII).....	[1½]
Surveying (Civ. Eng. I).....	1 [2]	Topographic Surveying (Civ. Eng. II)...	1 [2]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern Essays (English IV).....	4	Debating (English IX).....	1
Debating (English IX).....	1	Industrial History (History I).....	4
Graphic Statics (Civ. Eng. IV).....	2	Railroad Engineering (Civ. Eng. III b)...	3
Elements of Thermo-dynamics (Mech. Eng. XXV).....	3	Applied Mechanics (Mech. Eng. X), 1½,	
Applied Mechanics (Mech. Eng. X)...	5	Hydraulics (Mech. Eng. XI), 3½.....	5
Railroad Engineering (Civ. Eng. III a)...	5	Experimental Engineering b (Mech. Eng. XVI).....	[2]
Drill (Mil. Sci. and T. I).....	[1]	Geology (I).....	2
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Roads and Pavements (Civ. Eng. V)...	3 [1]
		Drill (Mil. Sci. and T. I).....	[1]
		Theory for Commissioned Officers (Mil. Sci. and T. III).....	½

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), 2½,		Civil Government (History II), 1½,	
Civil Government (History II) 1½...	4	Shakspeare (English V), 2½.....	4
Oratorical Writing and Extemporaneous Speaking (English X).....	1	Oratorical Writing and Extemporaneous Speaking (English X).....	1
Experimental Engineering c (Mech. Eng. XVII).....	2 [2]	Experimental Engineering d (Mech. Eng. XVIII).....	[2]
Bridge Details (Civ. Eng. VI).....	[2]	Bridge Design (Civ. Eng. VIII).....	[3]
Bridge Analysis (Civ. Eng. VII).....	2	Reinforced Concrete (Civ. Eng. X)...	2
Masonry Construction (Civ. Eng. IX)...	2 [1]	Water Supply (Civ. Eng. XII).....	3
Sewerage (Civ. Eng. XI).....	2	Tunneling (Civ. Eng. XIII).....	1
Assigned Work (Civ. Eng. XV).....	3	Contracts and Specifications (Civ. Eng. XIV).....	2
Drill (Mil. Sci. and T. I).....	[1]	Assigned Work (Civ. Eng. XV).....	3
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Drill (Mil. Sci. and T. I).....	[1]
		Theory for Commissioned Officers (Mil. Sci. and T. III).....	½

## CHEMICAL ENGINEERING.

## Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	2
Interpretive Reading (English VIII)...	1	German (Ger. II).....	3
German (Ger. II).....	3	General Physics (Physics II).....	4
Organic Chemistry (Chem. IV).....	3 [1]	Laboratory (Physics III).....	[1½]
General Physics (Physics II).....	4	Calculus (Math. XI).....	5
Laboratory (Physics III).....	[1½]	Qualitative Analysis (Chem. IIIa).....	1 [3]
Calculus (Math. X).....	5	Mechanism (Mech. Eng. XII).....	3
Descriptive Geometry (Mech. Eng. V)...	1 [2]	Drill (Mil. Sci. and T. I).....	[1]
Drill (Mil. Sci. and T. I).....	[1]		



### Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern Essays (English IV).....	4	Debating (English IX).....	1
Debating (English IX).....	1	Industrial History (History I).....	4
Heat Engineering (Mech. Eng. IX)....	3	Heat Engineering (Mech. Eng. IX)....	1½
Applied Mechanics (Mech. Eng. X)....	5	Quantitative Analysis (Chem. VIII)....	4½
Quantitative Analysis (Chem. VII)....	[3]	Reports and Discussions (Chem. XXI)...	1
Reports and Discussions (Chem. XXI)...	1	Drill (Mil. Sci. and T. I).....	[1]
Drill (Mil. Sci. and T. I).....	[1]	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Physical Chemistry (Chem. XII).....	4 [1]
Industrial Chemistry (Chem. XVI)....	4	or Organic Chemistry (Chem. V)....	4 [1]
		Applied Mechanics (Mech. Eng. X), Hydraulics (Mech. Eng. XI).....	5

### Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), 2½,		Civil Government (History II), 1½,	
Civil Government (History II), 1½...	4	Shakspeare (English V), 2½.....	4
Oratorical Writing and Extemporaneous Speaking (English X).....	1	Oratorical Writing and Extemporaneous Speaking (English X).....	1
Quantitative Analysis (Chem. VIII)....	[3]	Reports and Discussions (Chem. XXI)...	1
Experimental Engineering a (Mech. Eng. XV).....	[2]	Assigned Work (Chem. XX).....	3
Theory of Direct Currents (El. Eng. I) ..	3	Drill (Mil. Sci. and T. I).....	[1]
Organic Chemistry (Chem. V).....	3 [1]	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½
Reports and Discussions (Chem. XXI)...	1	Physical Chemistry (Chem. XII).....	4 [1]
Assigned Work (Chem. XX).....	3	or Organic Chemistry (Chem. V)....	4 [1]
Drill (Mil. Sci. and T. I).....	[1]	Organic Chemistry (Chem. VI).....	[3]
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Determinative Mineralogy, (Chem. XI) Works Management (Mech. Eng. XXIV).....	1½
Industrial Chemistry (Chem. XVII)....	[3]		1

### Teachers' Course in Applied Science.

This course is intended to prepare persons to teach in industrial schools those branches of applied science that pertain especially to agriculture and the mechanic arts. In such schools it has been found of especial importance that the teachers be trained in an environment of current thought, sympathetic with the industrial applications of science and intelligently appreciative of the methods and problems of such work. In response, therefore, to the need, and in accordance with an expressed purpose of the latest fund from the United States Government, we have constructed this course. The effort has been to make the course effective for its purpose, while at the same time retaining for it that breadth and that cultural influence that are necessary to fit the whole man or woman for social life and are especially important in persons who, as teachers, will exercise large personal influence over immature youth.

The general plan of the course is the same as that of the other two courses just described. It offers to the student, at the beginning

of the Junior year, three options, one of which he must select in conjunction with certain studies required of all. The tabulated course follows:

### Freshman Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I)...	3	Rhetoric and Composition (English I)...	3
German or French (I or II).....	3	German or French (I or II).....	3
Algebra (Math. I), 2½, Trigonometry (Math II), 2½.....	5	General Chemistry and Qualitative Analysis (Chem. II).....	3 [1½]
General Chemistry (Chem. I).....	2 [1½]	General Botany (Botany I).....	1 [2]
General Botany (Botany I).....	1 [2]	Analysis (Math. VIII b).....	5
Propagation of Plants (Hort I).....	1 [1]	Drawing, Pencil (Fr. Dr. II).....	[1]
Drawing, Pencil (Fr. Dr. II).....	[1]	{ Drill (Mil. Sci. and T. I).....	[1]
How to Study (Psy. and Ed. VIII).....	½	{ Theory (Mil. Sci. and T. II).....	½
{ Drill (Mil. Sci. and T. I).....	[1]	or	
{ Theory (Mil. Sci. and T. II).....	½	{ Euthenics (Home Econ. III).....	1
or		{ Physical Training.....	[1]
{ Hygiene (Home Econ. III a).....	1		
{ Physical Training.....	[1]		

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	2
Interpretive Reading (English VIII)...	1	German or French (II).....	3
German or French (II).....	3	Qualitative Analysis (Chem. III a)...	1 [3]
Organic Chemistry (Chem. IV).....	3 [1]	Physiology (Zoöl. III).....	3 [1]
Botany of Crops and Weeds (Bot. II)...	1 [2]	Geology (I).....	2
General Zoölogy (Zoöl. I).....	2 [2]	General Physics (Physics II).....	4
General Physics (Physics II).....	4	Laboratory (Physics III).....	[1½]
Laboratory (Physics III).....	[1½]	Drill (Mil. Sci. and T. I), or Physical Training.....	[1]
Drill (Mil. Sci. and T. I) or Physical Training.....	[1]		

### Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern Essays (English IV).....	4	Debating (English IX).....	1
Debating (English IX).....	1	Industrial History (History I).....	4
General Psychology (Psy. and Ed. IV)...	3	Drill (Mil. Sci. and T. I) or Physical Training.....	[1]
Drill (Mil. Sci. and T. I) or Physical Training.....	[1]	Theory for Commissioned Officers (Mil. Sci. and T. III).....	½
Theory for Commissioned Officers (Mil. Sci. and T. III).....	½	Elective.....	5
Elective.....	5	Options: A, B, C.	
All of the subjects in one of the follow- ing groups must be chosen:		All of the subjects in one of the follow- ing groups must be chosen:	
A. Agriculture.		A. Agriculture.	
Soils (Agron. III).....	4 [1½]	Farm Crops (Agron. IV).....	3 [1]
Fruit Culture (Hort. III).....	2	Economic Entomology (Zoöl. IV).....	3 [1]
B. Biology.		Forestry (Botany IV) or Spraying and Pruning (Hort. IV).....	1 [1]
Vertebrate Anatomy (Zoöl. VII).....	[3]	B. Biology.	
Plant Histology (Botany V).....	1 [4]	Histology and Embryology (Zoöl. VIII)...	2 [3]
C. Chemistry.		Plant Pathology (Botany VI).....	1 [4]
Quantitative Analysis (Chem. VII)....	[3]	C. Chemistry.	
Industrial Chemistry (Chem. XVI)....	4	Quantitative Analysis (Chem. VIII)....	[4½]
Reports and Discussions (Chem. XXI)...	1	{ Physical Chemistry (Chem. XII)....	4 [1]
		or	
		{ Organic Chemistry (Chem. V).....	4 [1]
		Reports and Discussions (Chem. XXI)...	1

## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Political Economy (Economics I), 2½		Civil Government (History II), 1½	
Civil Government (History II), 1½	4	Shakspeare (English V), 2½	
Oratorical Writing and Extemporaneous Speaking (English X)	1	Oratorical Writing and Extemporaneous Speaking (English X)	1
History of Education (Psy. and Ed. I)	3	Secondary Education (Psy. and Ed. III)	3
Principles of Education (Psy. and Ed. II)	1	Assigned Work	3
Assigned Work	3	Drill (Mil. Sci. and T. I) or Physical Training	[1]
Drill (Mil. Sci. and T. I) or Physical Training	[1]	Theory for Commissioned Officers (Mil. Sci. and T. III)	½
Theory for Commissioned Officers (Mil. Sci. and T. III)	½	Options: A, B, C.	
Options: A, B, C.		All of the subjects in one of the following groups must be chosen:	
All of the subjects in one of the following groups must be chosen:		<i>A. Agriculture.</i>	
<i>A. Agriculture.</i>		Vegetable Gardening (Hort. II)	2
Poultry (An. Husb. XIV)	[2]	Farm Buildings (An. Husb. XI)	[2]
Landscape Gardening (Hort. XVI)	1 [2]	Breeding (An. Husb. IV)	3
Feeding (An. Husb. VI)	3	<i>B. Biology.</i>	
<i>B. Biology.</i>		{ Forestry (Botany IV)	2
Plant Breeding (Agron. XI)	3	or	
Trees and Shrubs (Botany III)	[1]	{ Spraying and Pruning (Hort. IV)	1 [1]
Entomology (Zoöl. V)	1 [2]	General Zoölogy (Zoöl. II)	1 [2]
<i>C. Chemistry.</i>		Entomology (Zoöl. V)	2 [2]
Industrial Chemistry (Chem. XVII)	[3]	Trees and Shrubs (Botany III)	[1]
Elective	3	<i>C. Chemistry.</i>	
Reports and Discussions (Chem. XXI)	1	Organic Chemistry (Chem. VI)	[3]
		Determinative Mineralogy (Chem. XI)	[1] ½
		Physical Chemistry (Chem. XII)	4 [1]
		or Organic Chemistry (Chem. V)	4 [1]
		Reports and Discussions (Chem. XXI)	1

## The Course in Home Economics.

The object of the home economics course is to fit young women for homemaking and to provide adequate training for teachers of the various household arts. Nowhere is the application of modern science to everyday life more important than in the home. In no other lifework do women find greater need of scientific knowledge and technical skill than in the intelligent and economic administration of household affairs.

The course includes instruction in the planning, sanitation, decoration, and care of the house and its administration on the economic side; the preparation of food from the scientific and economic points of view; the study of nutrition; the discussion of problems of personal and public hygiene and instruction in the care of infants and young children. During one year instruction is given in hand sewing, machine practice, and in drafting, cutting, and making of plain garments. Although the main work is scientific and technical, the importance of artistic and literary training for home life has not been neglected. It is recognized that all the knowledge of right living is needed to assist the student to a broader conception of citizenship as well as in performing the manifold duties of daily life.

Attention has also been given, in planning the course, to the need of students desiring to enter special fields of domestic activity along institutional and educational lines of work.

The entrance requirements are the same as for the other college courses. Thirty-eight of the credits required for graduation, are in the home economics department. Students are expected to take the course as outlined below, with choice of electives; but when entered in other courses in the college they may elect certain work in the home economics department, under direction of the head of the department. The tabulated course follows:

### Freshman Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Rhetoric and Composition (English I)...	3	Rhetoric and Composition (English I)...	3
German or French (I or II).....	3	German or French (I or II).....	3
Algebra (Math. I), 2½; Trigonometry Math. II, 2½.....	5	General Chemistry and Qualitative An- alysis (Chem. II).....	3 [1½]
General Chemistry (Chem. I).....	2 [1½]	General Botany (Botany I).....	1 [2]
General Botany (Botany I).....	1 [2]	Drawing, Pencil (Fr. Dr. II).....	[1]
Drawing, Pencil (Fr. Dr. II).....	[1]	Domestic Art (H. Ec. I).....	1 [3]
Domestic Art (H. Ec. I).....	[1]	Euthenics (H. Ec. IIb).....	[1]
Hygiene (H. Ec. IIIa).....	1	Physical Training.....	[1]
How to Study (Psy. and Ed. VIII).....	½		
Physical Training.....	[1]		

### Sophomore Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Newspaper Work (English II).....	1	Argumentation (English III).....	2
Interpretive Reading (English VIII)...	1	German or French (II).....	3
German or French (II).....	3	Qualitative Analysis (Chem. IIIa)....	1 [3]
Organic Chemistry (Chem. IV).....	3 [1]	Physiology (Zool. III).....	3 [1]
General Zoology (Zool. I).....	2 [2]	Descriptive Physics (Physics I).....	5
Color Problems (Fr. Dr. IV).....	[1]	Foods (H. Ec. IV).....	2 [1½]
Foods (H. Ec. IV).....	3	Physical Training.....	[1]
Physical Training.....	[1]		

### Junior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Modern Essays (English IV).....	4	Debating (English IX).....	1
Debating (English IX).....	1	Industrial History (History I).....	4
General Psychology (Psy. and Ed. IV)...	3	Physiological Chemistry (Chem. XIX)...	4
Vertebrate Anatomy (Zool. VII).....	[3]	Histology and Embryology (Zool. VIII)...	2 [3]
Mechanical Drawing (Mech. Eng. I)...	1 [½]	History of Art (Fr. Dr. III).....	2
Human Nutrition (H. Ec. VI).....	3	Freehand Drawing (Fr. Dr. VIII).....	[1]
Physical Training.....	[1]	Dietetics (H. Ec. VIII).....	1 [1]
Elective.....	1	Physical Training.....	[1]
Sanitation (H. Ec. IX).....	2	Home Decoration (H. Ec. VII).....	2



## Senior Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS
Political Economy (Economics I).....	2 $\frac{3}{4}$	Civil Government (History II).....	1 $\frac{1}{2}$
Civil Government (History II).....	1 $\frac{1}{2}$	Shakspeare (English V).....	2 $\frac{1}{2}$
Oratorical Writing and Extemporaneous Speaking (English X).....	1	Oratorical Writing and Extemporaneous Speaking (English X).....	1
Food Analysis (Chem. X).....	[4]	Assigned Work (H. Ec. XIV).....	3 [2]
History of Art (Fr. Dr. III).....	2	Home Nursing (H. Ec. XII).....	1
Hygiene and Care of Children (H. Ec. XI).....	2	Bacteriology I.....	1 [2]
Home Administration (H. Ec. XXI)...	1 [2]	Physical Training.....	[1]
Bacteriology I.....	1 [2]	Elective.....	6
Physical Training.....	[1]		
Elective.....	1		

## II. SHORT COURSES IN AGRICULTURE AND IN DOMESTIC SCIENCE.

To meet the needs of those who find it out of their power to undertake a four years' college course, but who, nevertheless, desire to increase their efficiency on the farm or in the home, the college offers what are known as short courses in agriculture and in domestic science. At present each of these courses is of two years' duration. Students may with advantage take only a part of the courses if unable to remain for the whole two years.

It is required of applicants for these courses that they be of at least eighteen years of age at entrance, that they shall have completed at least the common school, that they shall have a definite purpose in mind in applying for the course desired, and *that within three weeks after entrance they shall satisfy their teachers that they are sufficiently mature, sufficiently earnest and sufficiently capable to warrant their remaining for the course.* Every effort will be made to guard these courses from becoming a refuge for the idle, the purposeless, and therefore the unsuccessful, and to that end drastic measures of elimination will be used whenever necessary, but especially at the end of the first three weeks of the year.

The courses are in no case supposed to serve as a substitute for the regular work of the college either in character or in scope of the subject-matter presented, and do not lead, directly or indirectly, to a degree, a certificate only being granted. Neither are they to be considered as preparatory to the college work. Their particular function is to give, in the shortest, most direct way possible, certain definite, specific, and perhaps uncorrelated information which will be of immediate value on the farm or in the home.

In studies of common interest, like mathematics and English, all short-course students work together. All other instruction is of a special nature and is given in the respective departments of agri-



culture and home economics. In English, the object is to develop the power of clear analysis and expression by continued drill in grammar and composition, based upon readings in industrial or political history.

The special work in agriculture treats in an elementary way of such subjects as plant life, soils and fertilizers, vegetable gardening, stock judging, crops, dairy practice, poultry, fruit culture, etc. The course in domestic science gives practical instruction in the care of the house, foods, plant life, physical training, home management, etc.

Short-course work is of comparatively recent introduction at this institution, and consequently is still in the process of development.

## Agriculture.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (A).....	5	Elementary English (A).....	5
Plant Life (Botany A).....	1 [2]	Plant Life (Botany A).....	1 [2]
Elementary Zoölogy (A).....	3 [1½]	Soils, Fertilizers (Agron. A).....	4 [1]
Breeds (An. Husb. A).....	2	Plant and Animal (Chem. A).....	3 [1]
Stock Judging (An. Husb. B).....	[2]	Nursery Practice (Hort. C).....	1 [1]
Plant and Animal (Chem. A).....	3 [1]	Benchwork (Woodwork I).....	[1½]
Drill (Mil. Sci. and T. I).....	[1]	Drill (Mil. Sci. and T. I).....	[1]

## Second Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Bookkeeping (Math. G).....	4	Vegetable Gardening (Hort. A).....	2 [1]
Crops and Rotation (Agron. B).....	3 [1]	Farm Management (Agron. C).....	4
Dairy Practice (An. Husb. C).....	1 [2]	Breeding (An. Husb. E).....	2 [1]
Principles of Feeding (An. Husb. D)...	3	Poultry (An. Husb. F).....	1 [1]
Fruit Culture (Hort. B).....	3	Farm Buildings (Woodwork H).....	[1]
Poultry (An. Husb. F).....	1 [1]	Farm Machinery (Agron. D).....	1 [2]
Care of Farm Animals (An. Husb. G)...	2	Spraying and Pruning (Hort. E).....	1 [1]
Drill (Mil. Sci. and T. I).....	[1]	Home Grounds (Hort F).....	2
		Drill (Mil. Sci. and T. I).....	[1]

## Domestic Science.

### First Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (A).....	5	Elementary English (A).....	5
Bookkeeping (Math. G).....	5	Plant Life (Botany A).....	1 [2]
Plant Life (Botany A).....	1 [2]	Floriculture (Hort. D).....	[2]
Elementary Zoölogy (A).....	3 [1½]	Foods (Dom. Sci. C).....	3 [1½]
Household Technique (Dom. Sci. A)...	1	Woodcarving.....	[1½]
Foods (Dom. Sci., Ca.).....	[1]	Freehand Drawing.....	[3]
Sewing. (Dom. Sci. B).....	[1]	Physical Training.....	[1]
Physical Training.....	[1]	Pencil Drawing (Fr. Dr. A).....	[3]

### Second Year.

FIRST TERM.	CREDITS.	SECOND TERM.	CREDITS.
Elementary English (B).....	3	Elementary English (B).....	3
Plant and Animal (Chem. A).....	3 [1]	Plant and Animal (Chem. A).....	3 [1]
English History (History A).....	3	English History (History A).....	3
Dietetics (Dom. Sci. D).....	3 [1½]	Management of House (Dom. Sci. E)...	1
Poultry (An. Husb. F).....	1 [1]	Hygiene (Dom. Sci. F).....	1
Freehand Drawing.....	[2]	Textiles (Dom. Sci. G).....	[1½]
Physical Training.....	[1]	Vegetable Gardening (Hort. A).....	2 [1]
Pencil Drawing (Fr. Dr. A).....	[2]	Poultry (An. Husb. F).....	1 [1]
		Physical Training.....	[1]

### III. SPECIAL POULTRY COURSE.

For many years this college has offered a winter course in the poultry industry. In fact, the first poultry course to be offered in the United States was offered here sixteen years ago. The college will continue to offer a course during the winter term.

#### Requirements for Admission to the Degree Courses.

##### UNITS.

The requirements for admission are reckoned in units. A "unit" represents the successful completion of a year's study of a subject, to which have been devoted not less than one hundred and twenty recitation periods of sixty minutes each, or their equivalent (*e. g.*, one hundred and eighty periods of forty minutes each). Fourteen units are required. A student may obtain this amount of entrance credit from high-school work or from examination.

##### GROUPS.

The entrance subjects are divided into two groups, A and B. Those in A, with one exception—solid geometry—are required of all candidates for admission.

##### GROUP A.

The school year is reckoned at thirty-six weeks, the minimum length.

English.....	108 weeks.....	3 units.
German or French.....	36 weeks.....	1 unit.
Algebra.....	54 weeks.....	1½ units.
Geometry, Plane.....	36 weeks.....	1 unit.
Geometry, Solid—for engineering students only, 18 weeks.....		½ unit.
Physics.....	36 weeks.....	1 unit.
History.....	36 weeks.....	1 unit.

The remainder of the fourteen units must be taken from

##### GROUP B.\*

No subject is accepted for more than the amount here stated or for less than two-fifths of a unit.

Foreign Language.....	216 weeks.....	6 units.
Geometry, Solid—for other than engineering students, 18 weeks.....		½ unit.
Botany.....	36 weeks.....	1 unit.

\*Other subjects not here named will receive due consideration if presented on the application blank, with a statement of the work done.

Chemistry.....	36 weeks.....	1 unit.
Geology.....	18 weeks.....	$\frac{1}{2}$ unit.
Physiography.....	36 weeks.....	1 unit.
Physiology.....	18 weeks.....	$\frac{1}{2}$ unit.
History.....	36 weeks.....	1 unit.
Drawing.....	36 weeks.....	1 unit.
Domestic Science.....	18 weeks.....	$\frac{1}{2}$ unit.
Shop Practice.....	18 weeks.....	$\frac{1}{2}$ unit.
Farm Practice.....	18 weeks.....	$\frac{1}{2}$ unit.

## REGISTRATION.

Registration occurs on the first day of each term, from 9 A. M. to 12 M. and from 1 P. M., to 4 P. M. A special fee of one dollar will be charged for registration after the first day of each term.

## METHODS OF ADMISSION.

On any or all of the subjects named in both groups, satisfactory standings from any reputable high school will be accepted in lieu of examination, on presentation of a copy of the student's full record in the high school, showing clearly the nature of the work pursued in each subject, time devoted to it, and grade of work done. This copy must be duly signed by the proper official of the school, and must be accompanied by a certificate of good moral character. The latter, however, may be from any reputable source. On application, blanks showing definitely the full nature of the information desired from the high school will be furnished.

Candidates not presenting satisfactory standings from reputable high schools will be examined, over ground corresponding to the number of units attached, on all the subjects of Group A and on such of Group B as they may offer. Examinations for entrance will be held at the opening of the college year in September, as announced in the calendar, page 9.

## SPECIFICATIONS OF GROUND TO BE COVERED.\*

## GROUP A.

These subjects, with the exception stated, are required of all students to the extent indicated by the number of units designated in each case.

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\*For any or all of the subjects described below the requirements of the College Entrance Examination Board, upon which these specifications are largely based, will be accepted. A circular stating these requirements in detail and blank forms of application for examination may be obtained by sending ten cents in stamps to the College Entrance Examination Board, Post Office Sub-Station 84, New York City.

## Languages.

ENGLISH, 3 UNITS.—In English two aims are sought: first, a knowledge of the language—including the acquisition of an ample vocabulary and power of effective expression—second, some acquaintance with the literature. To attain the first, grammar and composition must be thoroughly studied. Throughout the secondary-school course there should be much practice in writing along a variety of lines suggested by the pupil's experience, his general interests, and studies other than English. Spelling, punctuation, accuracy of idiom, should receive due attention in all written work; while correct and forceful oral expression should also be insisted upon.

To meet the requirement in literature certain selections are to be made from two lists of works—one for reading, the other for closer study. It is hoped to foster in this way a taste for good books and an intelligent appreciation of them. Committing to memory selected passages and reading aloud are strongly urged. In all cases some knowledge of the author's life and his place in literature should be acquired, while a more exacting study of selected texts would lay emphasis on form and style, meaning of particular words and phrases, and the significance of allusions. The list of books prescribed for 1914-15 may be obtained from the nearest high-school principal.

GERMAN, 1 UNIT.—During the first year the work should consist of drill in pronunciation, the rudiments of grammar, writing from dictation, simple composition and conversation, and the reading of from 100 to 175 pages of easy prose and poetry.

FRENCH, 1 UNIT.—The course in French should parallel that in German. During the first year there should be drill in pronunciation, the rudiments of grammar, writing from dictation, simple composition and conversation, and the reading of from 100 to 175 pages of easy prose and poetry.

## Mathematics.

ALGEBRA,  $1\frac{1}{2}$  UNITS.—The requirement in algebra comprises the four fundamental operations; factoring, highest common factor and lowest common multiple; fractions; linear equations; exponents; radicals; quadratic equations; simultaneous equations involving quadratics; binomial theorem for positive integral exponents. Problems should be given at frequent intervals in the work.

PLANE GEOMETRY, 1 UNIT.—This requirement is met by the usual theorems and constructions of standard text-books, numerous originals, and applications.

SOLID GEOMETRY,  $\frac{1}{2}$  UNIT.—The ground is covered by the usual theorems and constructions of standard text-books, originals, and applications.

## Science.

PHYSICS, 1 UNIT.—This course should consist of class-room work based on a standard text-book, accompanied by lecture-table demonstrations and by numerous practical problems. A parallel course in individual laboratory work is desirable, but is not absolutely required. In the case of laboratory work, one hour of credit will be allowed for each two hours spent in the laboratory.

### History. 1 unit.

The requirement in history will be met by presenting any one of the following subjects: ancient history, especially Greek and Roman, with the chief events of the early Middle Ages to the death of Charlemagne (814); medieval and modern European history from 814 to the present time; English history; American history and civil government.

### GROUP B.

From this group units are to be taken, in addition to those of Group A, sufficient to make up the whole number required. Any combination of units, including fractions not less than two-fifths, will be allowed.

### Languages.

GERMAN, 2 OR 3 UNITS.—The requirement for one unit is indicated under Group A. One unit will also be allowed for second and one each for third and fourth year work. During the second year the course should be a continuation of the first as regards grammar, composition, and conversation. The reading should consist of at least 200 pages of such texts as Arnold's *Fritz auf Ferien*, Wildenbruch's *Das Edle Blut*, Mosher's *Willkommen in Deutschland* and Benedix' *Der Prozess*. Third-year study should emphasize reading and advanced composition. Suitable texts are Riehl's *Der Fluch der Schönheit*, Freytag's *Bilder aus der deutschen Vergangenheit*, Lessing's *Minna von Barnhelm*, Schiller's *Wilhelm Tell*, and Heine's *Die Harzreise*. The fourth year's work should mark a decided advance in the mastery of vocabulary and idiom as shown both in speaking and writing. The works read may be made the basis for themes. The following reading matter is suggested: Freytag's *Soll und Haben*, Fulda's *Der Talisman*, Hauff's *Lichtenstein*, Scheffel's *Ekkehard*, Schiller's *Wallenstein*, *Maria Stuart*, or *Geschichte des dreissigjährigen Krieges* (Book III), Dahn's *Ein Kampf um Rom*, Goethe's *Dichtung und Wahrheit* (Books I-IV).

FRENCH, 2 OR 3 UNITS.—The requirement for one unit is indicated under Group A. One unit will also be allowed for second and one each for third and fourth year work. Throughout the second year the course should be a continuation of the first as regards grammar, composition, and conversation. At least 250 pages of such texts as Bruno's *Le Tour de la France*, Malot's *Sans Famille*, Mérimée's *Colomba*, Sarcey's *Le Siège de Paris*, and Hugo's *La Chute* should be read. In the third year emphasis should be laid on reading. Some time ought also to be given to advanced composition. Among suitable texts may be mentioned Racine's *Athalie*, Corneille's *Le Cid*, Molière's *Le Bourgeois Gentilhomme*, Sandeau's *Mademoiselle de la Seiglière*, Vigny's *La Canne de Jonc*. From the fourth year's study increased facility in conversation and composition should be gained, and any modern French, other than technical, should be read with ease. Such texts as the following are recommended: the prose works of Dumas père, Hugo's *Ruy Blas*, La Fontaine's *Fables*, Sainte-Beuve's *Essays*, Taine's *Origines de la France Contemporaine*, Pellissier's *Mouvement Littéraire au XIX<sup>e</sup> Siècle*. At least 600 pages should be read.



LATIN, 1 TO 4 UNITS.—A credit of one unit will be given for each year's work in Latin, covering in all a standard beginners' book, four books of Cæsar's Gallic War, six orations of Cicero and six books of Virgil's Æneid. It is expected that work in prose composition and sight reading will be included in each subject.

## Mathematics.

SOLID GEOMETRY,  $\frac{1}{2}$  UNIT.—See Group A. For other than engineering students.

## Science.

BOTANY, 1 UNIT.—The preparation in botany should include individual laboratory work recorded by notes and diagrammatic drawings. Field work is desirable, and should also be accompanied by notes. The notebook and drawings certified by the teacher should be presented at the time of application for entrance credit. The year's course of study should consist of three parts, viz.: 1. The general principles of the anatomy, morphology, physiology, and ecology of seed plants. 2. The natural history of the plant groups. The structure, reproduction, and adaptations to habitat of one or two types from each group should be studied. 3. Classification. A brief study of the subdivisions of the above groups. Ability to determine species of flowering plants is not essential. Any standard text-book covering the above field may be used.

CHEMISTRY, 1 UNIT.—An elementary text-book, such as William's Elements of Chemistry or First Principles of Chemistry, by Brownlee and others, should be covered by recitations. At least one exercise per week must be devoted to individual work in the laboratory. The pupil must perform forty or more experiments, such as are described in the Report of the College Entrance Examination Board, 1909, and keep a notebook in which he describes the apparatus used, records the phenomena observed, and states the conclusions in his own words, in each experiment.

GEOLOGY,  $\frac{1}{2}$  UNIT.—In geology, a study of the following subjects should be made: rock-forming minerals, their names and chemical constituents; earthquakes—their cause and effects; volcanoes—distribution, types, character of eruption, nature of erupted material; supposed physical state of the earth's interior; surface agencies destructive to rocks, with brief illustrations; processes of re-construction with illustrations; rocks—classification, according to origin, rock fracture and dislocation, rock structure due to erosion, metamorphic rocks, mineral veins and their method of formation; conditions determining land sculpture; the geological periods, with land elevations, and the characteristics of climate, plant and animal life of each period.

PHYSIOGRAPHY, 1 UNIT.—This course should include a consideration of the earth as a globe, the atmosphere, the waters of the earth, the lands, life upon the earth, and the reactions between these elements. Special attention should be given to the questions of climate, the winds, the weather, tides, ocean currents, and to the effect of the ocean in modifying climatic conditions. Attention should be directed to the manner in which the land was originally formed and to the way in which the original formation has been and is being modified by the action of erosion, the

winds, and frost. Throughout the course consideration should be given to the manner in which the various physical characteristics of the earth have affected life upon its surface.

**PHYSIOLOGY,  $\frac{1}{2}$  UNIT.**—The text-book work should cover material equivalent to that of Martin's Human Body or Hough and Sedgwick's Human Mechanism. In addition the applicant should present a notebook, showing laboratory work upon the elementary physiological processes and general structure of mammals.

**ZOOLOGY, 1 UNIT.**—The work should include: 1. The general natural history of a number of common vertebrates and invertebrates common to the locality where the work is given. 2. The classification of these forms into phylum, class and order, with the characteristics of the several groups. 3. The main anatomical features of one vertebrate, two arthropods (one an insect); an annelid, preferably the earthworm, a coelenterate, two protozoans (*Amœba* and *Paramœcium* recommended). 4. The general physiology of the above types involving digestion, absorption, circulation, excretion, and nerve function. These should be compared with the same functions in the human body. 5. The following subjects should be brought before the student in connection with the foregoing studies: asexual and sexual reproduction, alternation of generations, regeneration, fertilization, and segmentation of egg cells; adaptation; variations, evidences of relationship between similar groups, the cell structure of animals.

Certified notebooks must be presented, which include notes upon work and discussion in classroom and drawings of the forms dissected.

### History, 1 unit.

See Group A.

### Drawing, 1 unit.

This may be either freehand or mechanical. If freehand drawing is offered, the candidate should submit at least fifteen drawings, the majority to be in pencil, certified as his work by the instructor. These should show ability to sketch from various objects with considerable accuracy of proportion and clearness of line, and a fair understanding of the rules of perspective and light and shade as applied in freehand sketching. A candidate may also present the equivalent of five hours per week for one year in elementary mechanical drawing, lettering, or sketching from models.

### Domestic Science, 1-2 unit.

In domestic science the student must present satisfactory evidence of knowledge in the following subjects: the use and care of the kitchen equipment, general cleaning processes, the marketable forms of staple foods. She must also show credit for at least twelve cooking laboratory lessons of two hours each.

### Shop Practice, 1-2 unit.

The candidate may offer carpentry or any of the various forms of benchwork given in a well-equipped manual training school, equivalent to five hours per week for one-half year.

### Farm Practice, 1-2 unit.

By "farm practice" is meant familiarity with the operations of the farm, such as the harnessing of teams, the use of tillage implements, and the care of dairy animals.

### Degrees.

The degree of Bachelor of Science is conferred upon a student who has completed one of the four-year courses outlined on pages 18-28. The degree of Master of Science is conferred upon those holding a Bachelor's degree from this institution, in regular order, or from other institutions having equal requirements, upon the completion of one year of resident study, the presentation of a satisfactory thesis in applied or economic science, and upon passing examinations in the subjects pursued. Candidates not graduates of this college must file with the committee on graduate study, not later than October first, a detailed statement of their previous work, certified by the proper authorities. They must select, not later than November fifteenth, a major and a minor subject which must be closely related and have the approval of the committee on graduate study and of the professor in whose department the principal work is done. Major subjects may be selected in any of the following departments: agriculture; botany; chemistry; zoölogy; bacteriology; home economics; electrical, mechanical and civil engineering. The minor may be selected from undergraduate subjects outlined in the catalogue; the major, however, must be advanced work specially arranged with the individual professor. The thesis must be typewritten, upon paper of the size and quality prescribed, and two copies must be in the hands of the president not later than June first.

The requirement for the degree of Mechanical Engineer, Electrical Engineer, or Civil Engineer, consists of three years of successful professional practice subsequent to the Bachelor's degree, one of which must have been in a responsible position; the presentation of an acceptable thesis; and the passing of examinations upon the investigations involved in the thesis.

A registration fee of five dollars is charged for an advanced degree. Students from outside the state pay a tuition fee of thirty dollars during the year of residence. The cost of a diploma is five dollars.

## Teachers' Certificates.

The following resolution adopted by the Board of Education of this state is self-explanatory: "The certification of the president (of this college) that an applicant for a teacher's certificate has pursued a secondary school course of four years, subject to the approval of the committee on qualifications, and in addition thereto has pursued a four years' collegiate course in the Rhode Island College will be received as evidence of the required qualifications in scholastic subjects for a teacher's certificate of the first grade."

By action of the Regents of the State of New York, taken June 9, 1910, the degrees of B. S. and M. S. from this college are accepted as a basis for the issuance of licenses to teach in that state.

## Expenses.

Tuition is free to residents of Rhode Island. To non-residents of the state, tuition is \$15.00 a term, or \$30.00 a year.

The regular college expenses are tabulated as follows:

Board, \$3.75 per week . . . . .	\$135 00
Room-rent, including heat and light . . . . .	30 00
Incidental fee, \$4.50 per term . . . . .	9 00
Student tax for Beacon, outside lectures, athletics, etc. . . . .	10 00
Laboratory expense, \$5 per term, estimated . . . . .	10 00
Uniform for military drill, estimated . . . . .	16 00
	<hr/>
	\$210 00

The first four items must be paid quarterly in advance; that is to say, \$46.00 will be required at the opening of the year, September 15, 1914, and also at each of the following dates: December 1, 1914; February 9, 1915; and April 12, 1915. Non-residents of the state should add to this sum \$7.50 for tuition each quarter. In order to secure dormitory accommodations, the student is required to deposit one dollar with the application, the dollar to be credited on the fall-term room-rent. If the student fails to take the room, the dollar is forfeited. The uniform also must be paid for at the opening of the college year, in advance. The item of laboratory expense includes all material used in the various laboratories, and the destruction, breakage, or marring of apparatus and tools, and must be paid when bill is presented at the close of each semester.



Nothing has been said concerning books. The probable cost of these will be from \$15.00 to \$30.00 per year. For miscellaneous expenses connected with college life, students should add a sum varying from \$10.00 to \$25.00. A fee of 50 cents will be charged for each second examination to make up a condition. Graduates pay the cost of diplomas, \$5.00. *No diplomas will be issued until all term bills have been paid.* Room-rent and incidental deposit will not be refunded on withdrawal during the quarter.

UNIFORM.—Every able-bodied male student is required to drill and to wear a uniform. The uniform must be paid for immediately on entering the college, when the students are measured for the suits. When worn only on drill and properly cared for, one uniform may last two or more years. The student may, however, wear his uniform all the time.

TRANSPORTATION.—The college conveys students daily to and from the railroad station free of charge. Once at the beginning and end of each term, a team conveys trunks to and from the station.

BOARDING STUDENTS.—The price of board for 1914-15 will be \$3.75 per week. Students who *leave regularly every week* on Friday afternoon and return Monday morning will receive a rebate for time of absence. No person will be admitted to the dining-room until he has secured from the bursar a meal ticket, on the back of which will be found the rules governing the holder of such ticket. After this ticket is issued, all charges for board will be made in accordance therewith, unless the student has the ticket changed by the bursar. Arrangement of charges for meals sent to students' rooms for any cause must be made in advance.

DORMITORIES FOR MEN.—East Hall affords excellent accommodations for men students. The two upper floors are entirely devoted to rooms for students. The sanitary conveniences on each floor are excellent and ample, including a full complement of shower baths. The first floor contains a handsome social room for the men, two dining-rooms and kitchen fitted with all modern equipment. South Hall and Watson House are devoted to the use of the fraternities and afford very desirable rooms for dormitory purposes. Two houses in the village of Kingston are also hired by the college for fraternity dormitories. The Beta Phi fraternity has erected its own dormitory with capacity for twenty-five students.



**DORMITORY FOR WOMEN.**—During the summer of 1909 the interior of Davis Hall was entirely reconstructed. On the first floor are the administration offices and the office of the extension department. The upper floors of the building are utilized for the women's department. The accommodations for women students in this building are under careful supervision, and compare favorably with those at any women's college in the country. There is a neat hospital, with all necessary adjuncts. The oversight of the young women is efficient, kindly, and painstaking. Attention is especially invited to the facilities and arrangements for the welfare of young women.

**FURNITURE.**—The rooms in the women's dormitory are provided with necessary furniture, including mattresses, but no other bedding material. *All students in the men's dormitory are required to supply their own furniture and bedding.* The necessary furniture may be obtained at the college when desired. A room may be furnished for from \$8.00 to \$10.00. Iron bedsteads three feet wide are included under room-rent. The furniture, if properly kept, may be sold when the student leaves, for one-half to three-fourths the original price. All students should bring with them such articles as sheets, blankets, pillow, pillow-slips (all for single bed), and towels. Men students are required to purchase mattresses at the college.

**ROOMS IN THE VILLAGE.**—Arrangements have been made for rooms in the village of Kingston, some of these being under college management and others in private houses. In the case of the former, room rent will vary from 60 cents to \$1.00 per week, with heat and light furnished, the student to provide other furnishings. Furnished rooms in private houses for students who occupy them throughout the college year range from \$1.25 to \$2.00 per week.

**COLLEGE STORE.**—Students will be required to pay cash at the store for all books and other supplies.

**DAMAGE FUND.**—All damage not due to ordinary wear will be assessed to students as follows:

1. Students at once acknowledging damage and agreeing to pay for same will be assessed actual cost of repair, including labor.
2. Students found guilty of such damage, but not acknowledging and settling for the damage will be charged double the cost of repair.

3. Students will be responsible for damage in their own rooms. Damage that is not settled as above may be assessed to all the students or to a group of students, pro rata. Each case and the amount of assessment will be considered on its merits.

### Religious Influences.

This college is a state institution, and consequently, the widest latitude is given to all creeds and forms of religious belief. Simple assembly exercises are held on one day of each week and are conducted by the president or some other member of the faculty. It is required that students attend assembly.

A branch of the Intercollegiate Young Men's Christian Association is doing active work among the men students, holding a meeting weekly throughout the year. This association conducts courses in bible study, and is taking the lead in endeavoring to establish sound and high ideas of college life.

The Young Women's Christian Union is doing a similar work for the young women.

The village church cordially invites all students to attend its services and if possible, to join its membership. Every effort is made by the college to minister to the higher life of the students and to bring before them the noblest ideals, without in any way attempting to coerce them to particular beliefs.

### The College Lecture Association.

Faculty and students, uniting with residents of the vicinity, conduct a winter lecture course, the aim of which is to introduce talented speakers upon subjects both entertaining and instructive. The association may be looked upon as a permanent and important factor in college activities. For the season of 1913-1914, the following program was secured:

Monday evening, November 17. Chauncey J. Hawkins, Naturalist. Stereopticon Lecture.

Friday evening, December 5. John B. Ratto, Impersonator.

Tuesday evening, January 20. Rogers & Grilley, Harpist and Entertainer.

Friday evening, February 20. Dr. E. A. Steiner, Lecture: "Immigration."

Friday evening, March 20. Muscanto's Orchestra.

## Equipment.

**FARM AND CAMPUS.**—The landed property of the college has a total area of 170 acres. About forty-one acres of this area are devoted to buildings, lawns, and athletic grounds; nine acres are in forest; and six are being developed as an arboretum. Thirty-five acres are used for the field investigations of the experiment station, which are valuable object lessons in agricultural instruction. The remainder is used for garden and orchard, and for raising crops for the live stock. The total value of land, buildings, and equipment is nearly \$400,000.

**AGRICULTURAL BUILDINGS.**—The agricultural buildings consist of a commodious dairy barn with laboratories for instruction in farm dairying and milk testing; a horse barn of modern construction; a greenhouse with an area of 10,000 square feet; a building attached to the greenhouse for class work in agronomy and horticulture, and a group of buildings used for instruction and experimentation in poultry raising.

**ENGINEERING BUILDINGS.**—The engineering department is equipped with modern machine, forge, and pattern-making shops, located in a building known as Ladd Laboratory. In Lippitt Hall, a granite building, 134 by 40 feet, are housed the lecture rooms, drawing rooms, testing rooms, and engineering laboratories of the department. A boiler house and a dynamo room, from which heat, power, and light are furnished for the various buildings, are a part of the engineering outfit for practical instruction and for experimentation in electrical and steam engineering.

**SCIENCE HALL.**—This new building was first occupied in October, 1913. It consists of three stories and a basement, measures 154 by 60 feet, and is built of native granite. Here are housed the departments of chemistry, physics, zoölogy, bacteriology, and botany. Each department is provided with commodious laboratories, recitation room, and department library room. An amphitheatre having a seating capacity of 150 and provided with suitable projection apparatus, serves for the common use of the various departments requiring such a room.

**HOME ECONOMICS LABORATORIES.**—The special laboratories of this department are located in South Hall and in a small building near it.

TAFT LABORATORY.—The laboratories and offices of the experiment station are housed in a granite building known as Taft Laboratory.

DORMITORIES.—East Hall is a stone building for men students. On the first floor are a social room, and a college commons with a seating capacity of 300. Davis Hall is also a stone building, the upper stories of which are used as a dormitory for women students, while the offices of administration are located on the first floor. South Hall and Watson House are small dormitories. The college also controls two small dormitories in the village of Kingston.

DRILL HALL AND ATHLETIC HOUSE.—The drill hall, a room 143 by 40 feet, located in Lippitt Hall, is used both as an armory and as a gymnasium. A dressing room and bath room are attached to the hall. An athletic house provided with bath and dressing rooms for out-of-door sports is located at the athletic field, which is equipped with cinder track and straightaway for track athletics. Tennis courts for both men and women are also provided.

### The Library.

The library occupies two large adjoining rooms in Lippitt Hall, and numbers over seventeen thousand volumes. The books are arranged in stacks, to which the students have free access. The Dewey system of classification is used; and a dictionary catalogue gives author, title, and subject entries. As the library has been from the first intended for reference work, the various departments of instruction have made their selections with the greatest care. In the reading-room, one hundred and twenty of the leading periodicals—of literary, scientific, and general interest—are on file. From time to time these are bound, and prove of great value in reference work.

Since the library has been a government depository twenty-five hundred books and pamphlets have been received, which are of value in scientific investigation and research.

The library is open every week day from 8:00 A. M. to 6:00 P. M., with the exception of an hour at noon. The librarian or her representative is in constant attendance, to aid any one in search of information. As the college is an institution designed to further the educational interests of Rhode Island, all residents of the state are at liberty to use the library.

### Location.

The college campus is one and one-half miles from Kingston station, which is at the junction of the main line of the N. Y., N. H. & H. R. R. with the Narragansett Pier branch, thus insuring excellent railroad accommodations. The buildings are on a hill which commands an extended view of the surrounding country—a location both healthful and beautiful. Sixteen trains stop daily at the station, so that the college is accessible from Providence or from New York City at almost any hour in the day. The ride from Providence is about forty to forty-five minutes in length. From New York the time is some four hours.

Pictures of the college buildings are published in Supplement to Volume X, No. 1, which may be had by addressing the President of the college.



## Departments of Instruction.

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The following subjects are offered in the different departments. All subjects in the departments of instruction preceded by a Roman numeral count towards the degree of B. S. All subjects preceded by a capital letter lead to a certificate.

### Agriculture.

PROFESSOR ADAMS, PROFESSOR COOLEY, PROFESSOR COBB, MR.  
BURDICK, MR. GODIN, MR. LAMBERT.

The instruction given in this subject is grouped under the three heads—agronomy, animal husbandry, and horticulture. The aim is to give such theoretical and practical training in the fundamentals of agriculture as will enable those who take this work to fill positions of trust and responsibility, either as owners of their own farms, managers of estates, or along other lines of agricultural activity.

That the graduates from this department may be fitted to take up the work outlined above, all students registered for a degree in agriculture will be required to show certain familiarity with the ordinary operations of the farm, before such degree is given.

In order that those students who have not had an opportunity to receive training in the practical work of the farm may become familiar with some of the more common operations, they will be required, during their connection with the college, to do a certain amount of routine farm work without pay. This will include work in the dairy barn, poultry yard, greenhouses and gardens. This training will be in addition to the laboratory credits prescribed in the regular course. The amount of such work required will depend upon the efficiency shown by the student. No college credits will be given for this work, yet the neglect of this phase of the training may be considered a sufficient cause for dismissal from the institution. Students may be required to spend one or two summers upon the farms in order to get additional training. Persons taking practical work upon farms

during the summer vacations will be required to furnish a certificate from their employers, stating the time spent on the farm and the kind and amount of work accomplished. Special attention must be given to that branch of agriculture which the student is to elect during the Senior year.

### AGRONOMY.

PROFESSOR ADAMS, MR. BURDICK.

The instruction in agronomy may begin the first term of the Sophomore year, when a study is made of the forage plants. Following this work are subjects dealing with the other field crops and their uses as food for man and beast. In the work with soils and fertilizers, especial emphasis is placed upon the problems connected with the proper use of chemical manures.

The business side of farm life is given attention in the subjects treating of farm equipment and management. Work with farm machinery is a laboratory course, in which the students are taught how to care for, repair, and operate modern farm machinery. In the Senior year there is instruction in plant breeding, a subject which is of the utmost importance to one who would make the most of the opportunities in crop production. Instruction in agricultural experimentation deals largely with the application of the results which have been obtained by the experiment station, to the practical problems of the farm.

The equipment of the department includes the college farm and barns; also the farm machinery, consisting of a good line of tillage implements, fertilizer distributors, grain drill, and harvesting machinery. A well-equipped blacksmith shop is also provided.

Students have the advantage of the field experiments which are being conducted by the experiment station upon fertilizer problems and with various rotations.

### Subjects.

II. Forage Crops.—History and development of the plants used for forage; silage, methods of construction of silos. *Two recitation credits per week, first term. Elective for Sophomores in Agriculture.*

III. Soils and Fertilizers.—Origin and constituents of soils; texture, moisture, drainage, methods of tillage. Farm manures, artificial manures, composi-

tion and use; formulas for various crops. *Four recitation and one and one-half laboratory credits per week, first term. Required of Juniors in Agriculture. Option for Juniors in Applied Science. Prerequisite: Chemistry I and II.*

IV. Farm crops.—Origin and history; production and place in the rotation of clovers, grasses, and root crops. *Three recitation credits and one laboratory credit per week, second term. Required of Juniors in Agriculture. Option for Juniors in Applied Science. Prerequisite: Botany I and II.*

VI. Farm Machinery.—Development of farm machinery, methods of construction, function, and operation. *Two recitation credits and one laboratory credit per week, second term. Option for Juniors in Agriculture. Mr. Burdick.*

VII. Farm Management.—Discussion of agricultural methods, choice of a farm, capital, marketing, types of farming accounts. *Two recitation credits per week, second term. Required of Juniors in Agriculture. Prerequisite: Agronomy III and IV.*

VIII. Farm Management (advanced).—Individual problems of farm management are assigned. Abandoned farms will be visited and a critical study made of the existing conditions. *Two recitation credits per week, first term. Option for Seniors in Agriculture.*

IX. Literature.—History of agricultural and horticultural literature; a study of the different types of agricultural literature as illustrated by ancient and modern authors. Reports upon special topics. *Two recitation credits per week, second term. Option for Seniors in Agriculture.*

X. Agricultural Experimentation.—Objects, methods, and results of agricultural experimentation. A study of federal and state aid to agriculture as shown in the work of the United States Department of Agriculture and the Experiment Stations. *Three recitation credits per week, first term. Required of Seniors in Agriculture.*

XI. Plant Breeding.—A discussion of the development of plants under cultivation; with reference to heredity, environment, variation, and selection. *Three recitation credits per week, first term. Required of Seniors in Agriculture. Option for Seniors in Applied Science. Prerequisite: Botany I and II.*

A. Soils and Fertilizers.—An elementary course upon the origin and nature of soils. Fertilizers; natural and artificial manures; preparation and use; fertilizer arithmetic. *Four recitation credits and one laboratory credit per week, second term. Required of Short-Course students in Agriculture, first year.*

B. Crops and Rotations.—Methods of culture and uses of the grasses, clovers, cereals, and root crops. Rotation for the various types of farms. *Three recitation credits and one laboratory credit per week, first term. Required of Short-Course students in Agriculture, second year.*

C. Farm Management.—An elementary course upon the principles of farm management, equipment, cost of production. *Four recitation credits per week, second term. Required of Short-Course students in Agriculture, second year.*

D. Farm Machinery.—Care and repair of farm implements. *One recitation and two laboratory credits per week, second term. Required of Short-Course students in Agriculture, second year. Mr. Burdick.*

## ANIMAL HUSBANDRY.

PROFESSOR COOLEY, MR. BURDICK, MR. LAMBERT, MR. RODMAN.

The subjects in animal husbandry are so arranged as to furnish practical as well as theoretical instruction in the selection, care and management of live stock on the farm. All students who graduate in agriculture are required to study breeds of stock, stock-judging, and veterinary medicine. The student is taught how to select and care for farm animals. Students specializing in animal husbandry are offered advanced stock-judging, the principles of breeding, and the management of herds, flocks, and studs. Work in dairying is offered during the second term of the Junior year, and one who cares to specialize will find an elective throughout the Senior year.

Instruction in poultry culture is given during the Junior year, and is both practical and theoretical. During the same year an elective is offered in advanced poultry judging. The equipment in poultry is particularly strong. The college poultry plant enables the student to obtain a large amount of practical experience in incubation, brooding, feeding, and general management. In addition to the poultry stock in the college yards, students have the opportunity of following the investigations which are being conducted by the experiment station. A six weeks' course in poultry keeping is offered also during the winter months, full information concerning which may be obtained by addressing the President of the college.

## Subjects.

I. Stock Judging.—Scoring and comparison of various types of horses, cattle, sheep and swine. Study of the special purpose or special type animal. *Two laboratory credits per week, second term. Required of Freshmen in Agriculture.* Professor Cooley.

II. Advanced Judging.—A continuation of the work given in Animal Husbandry I in the judging of the various classes of farm animals. Tracing of pedigrees. *Two laboratory credits per week, second term. Elective for Juniors or Seniors in Agriculture.* Professor Cooley.

III. Breeds.—History and characteristics of the principal breeds of farm animals. A study of conditions to which each is adapted. *Two recitation credits per week, second term. Required of Freshmen in Agriculture.* Professor Cooley.



IV. Principles of Breeding.—A study of the science and art of breeding. Discussion of the laws of heredity as applied to improvement of animal types. *Three recitation credits per week, second term. Required of Seniors in Animal Husbandry. Elective for others. Option for Seniors in Applied Science. Prerequisite: Zoölogy III.* Professor Cooley.

V. Management of Dairy Cattle.—This course covers the field of milk production. It includes the building up of the dairy herd; the proper care of dairy cattle under different conditions; the dairy barn; special problems of feeding for milk production; advertising; fitting for sale and show ring. *Two recitation credits per week, first term. Elective for Seniors in Agriculture.* Professor Cooley.

VI. Feeds and Feeding.—Composition of feeds, principles of animal nutrition. Various methods of feeding farm animals. Balanced rations. Feeding standards. *Three recitation credits per week, second term. Required of Seniors in Animal Husbandry. Elective for Seniors in Horticulture and Applied Science. Prerequisite: Chemistry XIV.* Professor Cooley.

VII. Dairy Practice.—Lectures and laboratory practice in Babcock test and in handling milk and making butter on the farm. Herd testing methods. *One recitation and two laboratory credits per week, second term. Required of Juniors in Animal Husbandry. Elective for others.* Mr. Burdick.

VIII. Dairy Practice.—Advanced work. Pasteurization. Starters. Testing for adulteration. Acidity. Moisture. *One recitation and two laboratory credits per week, throughout the year. Option for Seniors in Agriculture.* Mr. Burdick.

IX. Research and Literature.—*Hours to be arranged, first term. Option for Seniors in Agriculture.* Professor Cooley.

X. Veterinary Medicine.—Veterinary anatomy. Combating disease from the farmer's standpoint. Obstetrics. Injuries. *Three recitation credits per week, first term. Required of Juniors in Agriculture. Prerequisite: Zoölogy III.* Professor Cooley.

XI. Farm Buildings.—Plans, location, and estimate on the various farm buildings. *Two laboratory credits per week, second term. Elective for Seniors in Agriculture, and Seniors in Applied Science.* Mr. Rodman.

XII. Poultry Craft.—A study of breeds, care and management of all classes of fowls. *One laboratory credit per week, second term. Elective for Juniors in Agriculture.* Mr. Lambert.

XIII. Judging Poultry—Practice in scoring and judging all classes of fowls. *Two laboratory credits per week, second term. Elective for Juniors in Agriculture.* Mr. Lambert.

XIV. Poultry Husbandry.—Study of poultry investigations. *At least two laboratory credits per week, throughout the year. Elective for Seniors in Agriculture and Applied Science, first term.* Mr. Lambert.



XV. Management of Beef Cattle and Horses.—During the first nine weeks the course will cover practical methods of beef production. Studies will be made of successful practices in feeding for the market as well as advertising, fitting for sale and show ring, and the general care and management of beef cattle. During the last nine weeks, similar studies will be made in horse production; including market classes of horses, their production and utility, and successful methods of handling and training horses. *Two recitation credits per week, first term. Elective for Seniors in Agriculture.* Professor Cooley.

XVI. Management of Sheep and Swine.—During the first nine weeks the best systems of sheep husbandry will be studied. This will include rearing for mutton and wool; production of spring lambs; fattening sheep and lambs for market; general care and management of the breeding flock; advertising, fitting for sale and the show ring. During the last nine weeks similar studies will be made in pork production, including a study of foodstuffs with reference to their adaptability to pork production. *Two recitation credits per week, second term. Elective for Seniors in Agriculture.* Professor Cooley.

A. Breeds.—Breeds of horses, cattle, sheep, and swine. Emphasis is placed on the type best fitted to the agriculture of New England. *Two recitation credits per week, first term. Required of Short-Course students in Agriculture, first year.* Professor Cooley.

B. Stock Judging.—Judging of the various classes of animals and their adaptability to different purposes, as cattle for milk or beef production, horses for driving or draft. *Two laboratory credits per week, first term. Required of Short-Course students in Agriculture, first year.* Professor Cooley.

C. Dairy Practice.—Babcock test for dairy products, production of sanitary milk, and butter making. *One recitation and two laboratory credits per week, first term. Required of Short-Course students in Agriculture, second year.* Mr. Burdick.

D. Stock Feeding.—Principles of Feeding. Compounding rations. *Three recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.* Professor Cooley.

E. Principles of Breeding.—A study of the selection of animals, heredity, and variation. *Two recitation credits and one laboratory credit per week, second term. Required of Short-Course students in Agriculture, second year.* Professor Cooley.

F. Poultry Breeds and Care.—A study and comparison of the different breeds of poultry, care of incubators and brooders, methods of feeding for the production of meat and eggs. *One recitation and one laboratory credit per week, throughout the year. Required of Short-Course students in Agriculture and Domestic Science, second year.* Mr. Lambert.

G. Care of Animals.—Housing, care, and management of farm animals. Practical directions for handling of stock on the farm. *Two recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.* Professor Cooley.

## HORTICULTURE.

PROFESSOR COBB, MR. GODIN.

The aim of the instruction in horticulture is to help the student to understand the practical and scientific problems which arise in the various lines of work included under this subject.

The headquarters of the department are in the horticultural building. The main building contains the office and recitation rooms, together with photographic rooms. Attached to this building are greenhouses of modern construction, containing over 8,000 square feet under glass, 3,000 square feet of which is used by the experiment station for fertilizer experiments. The remainder is devoted to college work, and thus affords an excellent opportunity to become familiar with the growth of plants under glass. The land devoted to the department comprises the college gardens; and the fruit orchards, containing over 150 varieties of fruit, which afford an excellent opportunity for the study of apples and pears especially. There is also a small vineyard. A collection of flowering shrubs enables the student in landscape gardening to study, in the natural state, the material used in this work.

## Subjects.

I. Propagation of Plants.—Different methods, including seed testing. Soft, green, and hardwood cuttings. Layering, grafting, and budding. *One recitation and one laboratory credit per week, first term. Required of Freshmen in Agriculture and Applied Science.*

II. Vegetable Gardening.—Underlying principles and types of vegetable gardening; study of individual crops; text-book work. *Two recitation credits per week, second term. Required of Freshmen in Agriculture. Option for Seniors in Applied Science.*

III. Fruit Culture.—Fundamental principles of orcharding; soil, fertilizer, and cultivation. Methods of laying out orchards and planting. Tillage, pruning and spraying. Harvesting and storing fruits. Collateral reading and practical work. *Two recitation credits per week, first term. Required of Juniors in Agriculture. Option for Juniors in Applied Science.*

IV. Spraying and Pruning.—Preparation and application of spray mixtures; insecticides and fungicides. Methods of application for different orchard enemies, and machinery used. Pruning of trees and ornamental shrubs. *One recitation and one laboratory credit per week, second term. Required of Freshmen in Agriculture. Option for Seniors in Applied Science.*

V. Greenhouse Construction and Management.—Study of the different types of glasshouse structures; methods of heating and ventilating. *One recitation and two laboratory credits per week, second term. Option for Juniors in Agriculture.*

VIa. Floriculture.—History of floriculture. Study of greenhouse plants, collectively and individually; practical work in propagation, potting, watering, ventilating, fumigating, and spraying. Study of bulbs, bedding plants; palms and ferns. *One recitation and two laboratory credits per week, entire year. Option for Seniors in Agriculture. Prerequisite: Horticulture V.*

VIII. Literature of Horticulture.—See Agronomy IX.

IX. Assigned Work.—Special subjects chosen by the student. *Option for Seniors in Agriculture. Hours to be arranged.*

X. Pomology.—Orchard and bush fruits. Study of types; origin, and history; classification, description, and methods of handling. Orchard management. *One recitation credit and two laboratory credits per week, throughout the year. Option for Seniors in Agriculture. Prerequisite: Horticulture III.*

XI. Advanced Vegetable Gardening.—Study of one or more crops selected by student. Practical work, research work, and text-book. *One recitation credit and two laboratory credits per week, second term. Option for Seniors in Agriculture.*

XII. Plant Breeding.—See Agronomy XI.

XIII. Advanced Landscape Gardening.—A continuation of Horticulture VII, including an advanced study of the art which embraces the following points. Topographical surveying and map work, drainage, grading, specifications, etc. Park and cemetery work, civic improvement. *One recitation and two laboratory credits per week, throughout the year. Option for Seniors in Agriculture. Prerequisite: Horticulture XVI.*

XIV. Arboriculture.—Study of ornamental trees, shrubs, and other plants, both native and exotic, which are used in landscape gardening. This course is designed to enable the student to become familiar with the character, habit and adaptation of ornamental plants. *One recitation and one laboratory credit per week, first term. Option for Sophomores in Agriculture.*

XV. Tree Surgery.—A study of methods used in treating diseases of trees and shrubs. Treatment of insect injuries, preventive and remedial measures to be used in case of neglect, and mechanical injuries, such as chaining and bolting. Cement filling of cavities. *One recitation and two laboratory credits per week, second term. Option for Seniors in Agriculture.*

XVI. Landscape Gardening.—This subject is designed for students in general and consists of the rules and principles governing landscape gardening, the design and laying out of grounds for farm, village and city places, making of lawns, flower beds, etc. *One recitation and two laboratory credits per week, first term. Required of Juniors in Agriculture. Option for Seniors in Applied Science. Prerequisite: Horticulture XIV.*

A. Vegetable Gardening.—Fundamental principles of vegetable growing. Practical work in cold frames, hotbeds, and garden planting. *Two recitation*

*credits and one laboratory credit per week, second term. Required of Short-Course students in Agriculture and Domestic Science, second year.*

B. Fruit Culture.—Study of fruits; propagation; planning fruit gardens and plantations; harvesting and packing; care. *Three recitation credits per week, first term. Required of Short-Course students in Agriculture, second year.*

C. Nursery Practice.—Propagation by seed, cuttings, grafting, budding, starting, and care of nursery. Selection of stock, and initial pruning. *One recitation and one laboratory credit per week, second term. Required of Short-Course students in Agriculture, first year.*

D. Floriculture.—Propagation of flowering plants, care of window gardens, design of flowerbeds and borders. *Two laboratory credits, second term. Required of Short-Course students in Domestic Science, first year.*

E. Spraying and Pruning.—A study of the methods used in combating insect pests and plant diseases. Preparation and application of fungicides and insecticides. Study of nozzles, pumps, etc. *One recitation and one laboratory credit per week, second term. Required of Short-Course students in Agriculture, second year.*

F. Home Grounds.—A study of the materials to use, the essential principles of the art. Practice in designing, planting, and care of home grounds. *Two recitation credits per week, second term. Required of Short-Course students in Agriculture, second year.*

## Bacteriology.

DR. HADLEY.

The instruction in bacteriology is necessarily arranged to meet the requirements of several classes of students. First, those who desire a general knowledge of the bacteria and their relation to problems of human life; second, those who desire a knowledge of bacteriology as applied to the practical problems of agriculture and engineering; and third, those whose main interest lies in the relation of bacteria to disease and to problems of public health and hygiene. An attempt is made to give equal emphasis to each of these phases of the subject.

## Subjects.

I. General Bacteriology.—A subject designed to give the student a general knowledge of the bacteria. The first term's work involves a study of laboratory methods and technique, the isolation and determination of unknown species, the preparation of culture media, etc. The work of the second term is designed to acquaint the student with the varied application of bacteriology to practical problems. It includes a study of the bacteriology of the air, water, soil, milk and other foods; the relation of bacteria to dairying, agronomy, hygiene,



and to the prevention, diagnosis, and treatment of communicable diseases. Laboratory work supplemented by lectures. *Two laboratory credits and one recitation credit per week, throughout the year. Prerequisite: Botany I or Zoölogy I. Required for Seniors in Agriculture and Home Economics. Elective for other courses.*

II. Advanced Bacteriology.—Special work planned to meet the needs of the individual student. *From three to six laboratory credits per week throughout the year. Elective for Seniors and graduates. Prerequisite: Bacteriology I.*

III. Bacteriological Seminar.—Designed to afford opportunity for the discussion of bacteriological theories and problems. *One recitation credit per week, first term. Elective. Prerequisite: Bacteriology I.*

## Botany.

PROFESSOR MERROW, MR. MILES.

The aim of the department is to give a general knowledge of plant life, followed by subjects of an economic nature. The college is well located for carrying on this line of work. The native flora is extensive, and an abundance of material is furnished by the cultivated plants of the gardens and fields of the college farm. The green houses supply fresh material for winter use, and the herbarium of 5,000 specimens is a useful reference collection. The laboratory is equipped with dissecting and compound microscopes, a microtome, paraffin bath, and simple physiological apparatus. Charts and models are provided for lecture demonstrations. A good working library, including several botanical periodicals, is an important factor in the outfit for instruction.

## Subjects.

I. General Botany.—A study of common plants, their structure, physiology, evolution, and adaptation to environment. *Two laboratory credits and one recitation credit per week, throughout the year. Required of Freshmen in Agriculture, Applied Science, and Home Economics.*

II. Botany of crops and weeds.—*Two laboratory credits and one recitation credit per week, first term. Required of Sophomores in Agriculture and Applied Science.*

III. Trees and shrubs.—The determination of native and introduced trees and shrubs in summer and winter condition. *One laboratory or field credit per week, throughout the year. Option for Seniors in Applied Science.*

IV. Forestry.—The management of New England wood lots. *Two credits per week, second term. Given in alternate years, 1914, 1916. Option for Juniors or Seniors in Agriculture and Applied Science. Instructor, Mr. Miles.*



V. Histology.—Seed plants are studied by the usual histological methods of imbedding, sectioning, and staining. *Four laboratory credits and one recitation credit per week, first term. Elective for Seniors in Agriculture. Option for Juniors in Applied Science.*

VI. Pathology.—Diseases caused by parasitic fungi and the remedies for them. *Four laboratory credits and one recitation credit per week, second term. Elective for Seniors in Agriculture. Option for Juniors in Applied Science.*

VII. Assigned Work.—*Three credits throughout the year. Elective for Seniors in Applied Science and Agriculture.*

A. Plant Life.—Elementary agricultural botany. *Two laboratory credits and one recitation credit per week, throughout the year. Required of Short-Course students in Agriculture and Domestic Science, first year.*

## Chemistry.

DR. LEIGHTON, ASSISTANT PROFESSOR SMITH, DR. HARTWELL,  
MR. PERRY.

Instruction in this department begins in the Freshman year with experimental lectures, recitations, and laboratory practice in general and descriptive chemistry. The work is designed to give a thorough elementary knowledge of theoretical and descriptive inorganic chemistry, including the principal technical processes, and a brief account of the carbon compounds. As much attention as is practicable in a general course is given to the applications of the science to the problems of life. Two periods per week for the first half-year and three for the second half-year are devoted to the lectures and recitations, and three hours per week for a half-year to the practical work in the laboratory, where the student has an opportunity to verify some of the chemical theories and to become familiar with substances and their chemical behavior. During the second half of this year the laboratory period is devoted to qualitative analysis, which continues through the first half of the Sophomore year. The subject is taught in part by means of recitations and lectures, but mainly by work in the laboratory. Students are required to complete a systematic course in basic and acid analysis, and to analyze correctly a number of alloys, salts, and minerals.

Quantitative analysis is taught mainly by laboratory practice, but sufficient time is devoted to lectures and recitations to teach thoroughly the fundamental principles involved. The work comprises gravimetric and volumetric analysis, and the quantitative determination of salts, alloys, ores, minerals, and commercial and food products.

Determinative mineralogy, which includes blow-pipe analysis and crystallography, is taught by recitations and laboratory work. The student learns the physical properties of the common minerals, and their identification. The above subjects cover a comprehensive study of analytical chemistry, and are intended to give the student such theoretical and practical knowledge as to prepare him for analytical work of any kind.

The study of organic chemistry begins with a short course, designed to cover the general principles and methods, and to include a description of the more important compounds. The subject is continued by those who wish to specialize in chemistry in a more extended course covering the aromatic series and the chemistry of the dyestuffs, and accompanied by laboratory work in organic preparations and analysis. The theoretical and basic principles of chemistry, with their general application, are thoroughly studied by recitation, lectures, and laboratory work in the course in physical chemistry.

The descriptive side of industrial chemistry, which comprises a general survey of the technical applications of chemical principles to the arts and industries, is studied by recitation work; while practical technical operations, such as textile coloring, suited to the needs of the individual student, are studied by laboratory practice.

Agricultural chemistry, required of agricultural students in the Junior year, embodies the chemistry of soils and fertilizers, also the chemistry involved in the changes which take place during the growth of animals and plants, as well as in the storage or manufacture of the ordinary farm products.

Subject XXI is intended to familiarize the student with the general field of chemical literature, and to inculcate the habit of keeping up with the recent advance in chemical science by reports and discussion of articles appearing in the chemical journals. This course is preparatory for Subject XX, which involves original investigation. The laboratory occupies the first floor and a part of the basement of the new Science Hall, seventeen rooms altogether, including a large general laboratory, organic and analytical laboratories, weighing room, library, large lecture room, recitation room, two offices, store rooms and supply room. It is well equipped with apparatus and consulting library for teaching the subjects mentioned below.

## Subjects.

I. General Chemistry.—*Two recitation and one and one-half laboratory credits per week, first term. Required of Freshmen in all courses. Assistant Professor Smith, Mr. Perry.*

II. General Chemistry and Qualitative Analysis.—*Three recitation and one and one-half laboratory credits per week, second term. Required of Freshmen in all courses. Dr. Leighton, Assistant Professor Smith, Mr. Perry.*

III. Qualitative Analysis.—*Basic and acid analysis; analysis of salts, industrial and natural products. Three laboratory credits per week, first term. Required of Sophomores in Mechanical, Electrical and Civil Engineering. Dr. Leighton.*

III a. Qualitative Analysis.—*Basic and acid analysis; analysis of salts, industrial and natural products. Three laboratory and one recitation credits per week, second term. Required of Sophomores in Chemical Engineering, Home Economics and Applied Science. Dr. Leighton.*

IV. Organic Chemistry.—*Three recitation credits and one laboratory credit per week, first term. Required of Sophomores in Chemical Engineering, Home Economics, Agriculture, and Applied Science. Elective for others who have completed Chemistry III. Assistant Professor Smith.*

V. Organic Chemistry (advanced).—*To be given alternate years. Given next in 1916. Four recitation credits and one laboratory credit per week, second term. Required in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry IV. Dr. Leighton.*

VI. Organic Chemical Laboratory.—*Three laboratory credits per week, second term. Required of Seniors in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry IV. Assistant Professor Smith.*

VII. Quantitative Analysis.—*Gravimetric and volumetric analysis. Analysis of minerals, ores, alloys, and industrial products. Three laboratory credits per week, first term. Required of Juniors in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry III. Assistant Professor Smith.*

VIII. Quantitative Analysis.—*Four and one-half laboratory credits per week, second term, Junior year, and three laboratory credits per week, first term, Senior year. Required of students in Chemical Engineering, both terms. Required of students who take the Chemical Option in Applied Science, second term, Junior year. Elective for those who have completed Chemistry III. Assistant Professor Smith.*

X. Quantitative Analysis.—*Food Analysis. Four laboratory credits, first term. Required of Seniors in Home Economics. Elective for others who have completed Chemistry IV. Assistant Professor Smith.*

XI. Determinative Mineralogy.—*One and one-half laboratory credits per week, second term. Required of Seniors in Chemical Engineering and of Seniors who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry III.* Mr. Perry.

XII. Physical Chemistry.—*To be given alternate years. Given next in 1915. Four recitation credits and one laboratory credit per week, second term. Required in Chemical Engineering and of those who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry III.* Dr. Leighton.

XIV. Agricultural Chemistry.—*Three recitation credits and one laboratory credit per week, second term. Required of Sophomores in Agriculture. Prerequisite: Chemistry I-IV.* Dr. Hartwell.

XV. Gas Analysis.—*See Mechanical Engineering XV.*

XVI. Industrial Chemistry.—*Four recitation credits per week, first term. Required of Juniors in Chemical Engineering and of Juniors who take the Chemical Option in Applied Science. Elective for others who have completed Chemistry IV.* Dr. Leighton.

XVII. Industrial Chemistry.—*The work under this subject may be varied to suit the needs of individual students; including such subjects as technical analysis and textile coloring. Three laboratory credits per week, first term. Required of Seniors in Chemical Engineering and of Seniors who take the Chemical Option in Applied Science.* Dr. Leighton.

XIX. Physiological Chemistry.—*Four credits per week, second term. Required of Juniors in Home Economics.* Assistant Professor Smith.

XX. Assigned Work.—*Three credits per week, throughout the year. Required of Seniors in Chemical Engineering and Seniors who take the Chemical Option in Applied Science.* Dr. Leighton.

XXI. Reports and Discussion of Chemical Subjects and Recent Investigations.—*One credit per week, throughout the year; required of Juniors and Seniors in Chemical Engineering; and of Juniors and Seniors taking the Chemical Option in Applied Science.* Dr. Leighton.

A. Chemistry of Plant and Animal Life.—*Three recitation credits and one laboratory credit per week, throughout the year. Required of Short-Course students in Agriculture and Domestic Science, second year.* Assistant Professor Smith.

## Freehand Drawing.

MISS ELDRED.

The aim of the subjects described below is to supply the practice in drawing necessary for subsequent work in the science laboratories, to give an elementary knowledge of the history of art, and to develop



some appreciation of the beautiful in art and nature. For the first term, the work comprises outline drawing in pencil mainly from plant and animal forms. The work of the second term includes some consideration of perspective and of the principles of design. In the first term of the Sophomore year the home economics students consider the subject of color,—the principles of color harmony, and the use of color in design and decoration. The object of this work is to develop appreciation of color and to enable the student to exercise a more intelligent and sensitive discrimination in its use. In the Junior year, special work is arranged for the first term to accompany and illustrate the home economics course, treating of the arrangement and decoration of the house. The brief course in the history of art aims to give some familiarity with the greatest achievements of past and present in architecture, sculpture, and painting. The department has a considerable equipment of illustrative material for this work, including a collection of about one hundred and fifty casts and over three hundred photographs of folio or larger size, with many smaller prints, among them two thousand University Prints, illustrating Greek and Roman sculpture, and the art of Italy, Germany, and the Netherlands.

### Subjects.

II. Pencil Drawing from Objects.—*One laboratory credit per week, first term. Required of Freshmen in Agriculture. One laboratory credit per week, throughout the year. Required of Freshmen in Applied Science and Home Economics. Five laboratory credits per week, first term. Elective for Freshmen.*

III. History of Art.—*Two recitation credits per week, second term. Required of Juniors in Home Economics. Two recitation credits per week, first term. Required of Seniors in Home Economics.*

IV. Color Problems.—*One laboratory credit per week, first term. Required of Sophomores in Home Economics.*

V. Drawing in Charcoal from Still Life and the Cast.—*Two laboratory credits per week, second term. Elective.*

VI. Pen-and-ink Drawing, Water-Color, or Pastel.—*Two laboratory credits per week, second term. Elective.*

VII. Modeling.—*Two laboratory credits per week, second term. Elective.*

VIII. Work Illustrating Home Economics VII.—*One laboratory credit per week second term. Required of Juniors in Home Economics.*



IX. History of American Art.—*One recitation credit per week, second term. Elective.*

X. Modern European Art.—*One or two recitation credits per week, second term. Elective.*

A. Pencil Drawing, Design, and Color.—*Three laboratory credits per week, second term, first year. Two laboratory credits per week, first term, second year. Required of short-course students in Domestic Science.*

## Economic and Social Science.

PRESIDENT EDWARDS.

### Subjects.

I. Political Economy.—Text-book, supplemented by lectures, reading, and essays. *Four recitation credits per week, first term, first twelve weeks. Required of Seniors in all courses.*

II. Agricultural Economics.—The study of agriculture as an industry, from the point of view of political economy. Includes a study of the agricultural market; transportation of agricultural products; agricultural labor; farm ownership and tenancy; mortgages, etc. *Elective.*

III. Rural Sociology.—Movements of the farm population—causes and results; general social conditions of farmers, such as illiteracy, health, crime, etc.; personal and social traits developed by rural life; means of communication in rural communities; the rural school; agricultural education; the country church; farmers' organizations; federation of rural social forces. *Elective.*

## Home Economics.

PROFESSOR CAMPBELL.

The aim of this department is to give both theoretical and practical training in the economic administration of the home. The laboratory is situated in a building by itself, which is finished and furnished in such a manner as to demonstrate the sanitary principles involved in proper kitchen arrangements. It is amply equipped with the most recent scientific cooking-apparatus, inclusive of thermometers, metric scales, different kinds of stoves, and individual utensils. The work in chemistry, biology, etc., is, however, carried on in the laboratories of those departments. There is a good home economics library, and students are expected to make intelligent use of the main library in reference work, as well as to study those bulletins of the Department of Agriculture and such state reports as deal particularly with the subjects of food and nutrition.

## Subjects.

I. Domestic Art.—The course includes a study of the home industries, the study of the various textile fibers, and development of spinning and weaving, modern processes of manufacture and the comparison of textile fabrics with special reference to suitability to use and economic value. The laboratory work includes both hand and machine sewing, the taking of measurements, selection, alteration, and designing of patterns, the making of aprons, underwear, tailored waists, and dresses. *One laboratory credit per week, first term; and three laboratory and one recitation credit per week, second term. Required of Freshmen in Home Economics.*

III. a. Personal Hygiene.—This course considers the aim of personal hygiene as the maintaining of the most efficient human machine for the life needs of the individual. It endeavors to give and establish ideals of health and efficiency. *One recitation credit per week, first term. Required of all women Freshmen.*

III. b. Euthenics.—The following topics are considered: environment of human life; problems of adaptation to modern conditions and progress; personal aim; individual responsibility; factors in human efficiency. *One recitation credit per week, second term. Required of all women Freshmen.*

IV. Foods.—A systematic study is made of the food constituents, their sources, chemical composition, properties, nutritive and economic values. This course is accompanied by laboratory practice in the preparation of many representative foods. Class demonstrations are given from time to time. *Three recitation and three laboratory credits per week, first term; two recitation and one and one-half laboratory credits per week, second term. Required of Sophomores in Home Economics. Prerequisites: Chemistry I, II.*

V. Household Methods and Management.—Lectures and discussions upon general housework, the principles of laundering, marketing, apportionment of income, maintenance of standards, household administration, social, legal, industrial, and educational problems of the family. *Two recitation credits per week, first term. Required of Sophomores in Home Economics.*

VI. Human Nutrition.—Composition of the animal body and its daily food requirements; methods of investigation employed in studying the nutritive function of foods; the changes affected by cooking and by the processes of digestion; balancing of dietaries; food economy. *Three recitation credits per week, first term. Required of Juniors in Home Economics. Prerequisite: Chemistry IV, Zoölogy III, Home Economics IV.*

VII. Home Decoration.—A study of the evolution of the house; its adaptation to modern conditions; the principles to be followed in planning, furnishing, and decorating the house from a sanitary and artistic standpoint. *Two recitation credits per week, second term. Required of Juniors in Home Economics. Prerequisite: Home Economics IX.*

VIII. Dietetics.—Problems in nutritive ratios; the balanced dietary; hygienic combinations of foods; construction of menus; adaptation of the diet to

age, occupation, health, and different climatic conditions. *One recitation and one laboratory credit per week, second term. Required of Juniors in Home Economics. Prerequisite: Home Economics VI.*

IX. Sanitation.—This course deals with household and public hygiene. Study of health and the causes of disease; vital resistance; susceptibility and immunity; infection and contagion; pollution of food and water supplies; prevention and inhibition of infection, decomposition and decay. *Two recitation credits per week, first term. Required of Juniors in Home Economics.*

X. Food Preservation.—Study of the processes of decomposition, fermentation, and putrefaction; practice in preserving foods by drying, salting, and sterilization; preparation of jelly, pickles, and canned fruits; discussion of commercial preservatives. *One laboratory credit per week, first term. Required of Seniors in Home Economics. Prerequisite: Home Economics IX.*

XI. Hygiene and Care of Children.—A study of the physical development of children; care of infants and young children; school hygiene. *Two recitation credits per week, first term. Required of Seniors in Home Economics. Prerequisite: General Psychology. Open to Juniors and Seniors in other courses.*

XII. Home Nursing.—Care of the sickroom and patient; administration of medicines; recording of symptoms; accidents and emergencies; hygiene of infectious diseases; antiseptics and disinfectants. *One recitation credit per week, second term. Required of Seniors in Home Economics. Prerequisite: Home Economics IX.*

XIV. Assigned Work.—This may be a problem in the biological, chemical, physiological, or economic aspect of the work in Home Economics. *Three recitation and two laboratory credits per week, second term. Required of Seniors in Home Economics.*

XV. Teaching of Home Economics.—Purpose and method of the work; courses of study, equipment, etc. *One recitation credit per week, second term. Elective for Seniors in Home Economics.*

XVI. History of Home Economics.—Development of home economics movement; a study of the work as presented in different types of institutions, and its industrial, educational, and sociologic aspects. *One recitation credit per week, first term. Elective.*

XVII. Textiles.—A study of fabrics; processes and appliances studied with reference to their historic development; primitive industries; modern processes of manufacture; dyeing, spinning, and weaving. *Two recitation credits per week, second term. Elective. Prerequisite: History I, Home Economics I.*

XVIII. Dressmaking and Tailoring.—*Three laboratory credits per week, second term. Elective for students who have completed Home Economics I.*

XIX. Food Products.—Production, manufacture, and marketing of foods; factors affecting cost. *Two recitation credits per week, first term. Elective.*

XX. A Study of the Family.—Development of the domestic institutions; social ethics of the family; legal, industrial, and educational problems of the household. *Two recitation credits per week, second term. Prerequisite: Home Economics V. Elective.*

XXI. Home Administration.—This course includes the care of the home, the planning, buying, preparation and serving of menus suitable for various occasions, methods of simplification of home duties, division of income, and keeping of household accounts. *Two recitation and one laboratory credit per week, first term. Prerequisite: Home Economics VIII. Required of Seniors in Home Economics.*

### DOMESTIC SCIENCE.

A. Household Technique.—This course is planned to give a knowledge of the processes involved in household work. It deals with the handwork of cooking and cleaning; care of rooms, table setting and serving, etc. *Two recitation credits per week, first term, first year. Required of Short-Course students in Domestic Science.*

B. Sewing.—Hand sewing; use of machine; drafting of patterns. *One laboratory credit, first term, first year. Required of Short-Course students in Domestic Science.*

C. a. Food.—Introductory work in the study of food. Practice deals with the preparation of simple and economic dishes. *One laboratory credit, first term, first year. Required of Short Course students in Domestic Science.*

C. Food.—Study of the five food principles and their nutritive and physiological functions; practice in the cookery of vegetables, cereals, fruits, milk, eggs, and meats. *Three recitation and one and one-half laboratory credits per week, second term, first year. Required of Short-Course Students in Domestic Science.*

D. Dietetics.—Provides instruction in advanced cooking; special cooking for sick and convalescent; planning of meals; discussion of dietaries. *Three recitation and one and one-half laboratory credits per week, first term, second year. Required of Short-Course students in Domestic Science.*

E. Management of the House.—Considers the materials, qualities, amounts, and cost of house furnishing and supplies; lessons in marketing. *One recitation credit per week, second term, second year. Required of Short-Course students in Domestic Science.*

F. Hygiene.—Study of the living machine, its mechanism and functions; the right use and proper care of the human mechanism; home nursing and emergencies. *One recitation credit per week, second term, second year. Required of Short-Course students in Domestic Science.*

G. Textiles.—Study of the clothing fabrics; dressmaking. *One and one-half laboratory credits per week, second term, second year. Required of Short-Course students in Domestic Science.*



## Psychology and Education.

PROFESSOR BOARDMAN.

The subjects in education provide instruction in the theory of the subject as derived from general and educational psychology, and in the history of education. As a part of the work visits are made to neighboring elementary and secondary schools for the purpose of observing the technique of the recitation with special reference to the courses in science.

### Subjects.

I. History of Education.—Study of educational theory and practice from the historical point of view, with reference to modern scientific and industrial education. *Three recitation credits per week, first term. Required of Seniors in Applied Science: Elective for Seniors in Home Economics.*

II. Principles of Education.—Study of the principles and methods of teaching. *One recitation credit per week, first term. Required of Seniors in Applied Science: Elective for Seniors in Home Economics.*

III. Secondary Education.—Principles of teaching, with special reference to the aims of the secondary schools, organization, management, and method in the high school. *Three recitation credits per week, second term. Required of Seniors in Applied Science: Elective for Seniors in Home Economics.*

IV. General Psychology.—Structure and functions of mental life; simple experiments. *Three recitation credits per week, first term. Required of Juniors in Applied Science and Home Economics.*

VIII. How to Study.—A practical course, based on psychological principles, designed to increase the efficiency of students. *One recitation credit per week, first nine weeks of the first term. Required of all Freshmen.*

## Mechanical Engineering.

PROFESSOR WALES, MR. ELDRED, MR. BEAMENS DERFER,

MR. MARTEL.

It is the object of the work in the department of mechanical engineering to turn out broad-gauged, self-dependent men, well trained in engineering theory, familiar with the practical matters of construction and operation, and having some knowledge of the economic relations which the engineer and industrial development bear to modern society. In the endeavor to train men who will touch



life, not at one point, but at many, the work of the department is supplemented and rounded out by extended and vigorous courses along the lines of electrical engineering, physics, mathematics, chemistry, English, history, modern languages, and political economy. The special work of the department of mechanical engineering divides itself naturally into the following general groups: shop practice, design, steam engineering, and experimental engineering. Each of the above groups is amplified and briefly described below:

### SHOP PRACTICE.

The object of this work is to give familiarity with principles, operations, possibilities, and management, rather than to develop the greatest dexterity in manipulation. Shop practice extends over three years of the course, and comprises forging and foundry work, pattern making, and machine-tool operation. The shops are exceptionally well equipped with machines and tools of all kinds. In the machine shop are six metal lathes, speed lathes, planes, 16-in. shaper, two drills, two tool grinders, drill grinder, milling machine, punching-press, vertical boring and turning mill, together with the usual assortment of tools and auxiliaries. The pattern shop is provided with lathes, circular saw, band saw, jig saw, dowel machine, surface and buzz planers, etc. Fifteen work-benches fully provided with the small tools of the pattern maker complete the equipment. The forge shop is equipped with the usual anvils, forges, fullers, swages, hardies, etc., while a full stock of patterns, shovels, riddles, flasks, and trowels is provided for the work in foundry practice. Enthusiasm is given to the work by the construction of things of real value—a new machine for the shop or a piece of apparatus for the laboratory—instead of spending the whole time on worthless “exercises.”

### DESIGN.

The work along the lines of design extends throughout the four years, beginning with freehand and mechanical drawing and ending with machine design and power-plant design in the Senior year. Leading up to this final work are the terms of mechanical drawing, descriptive geometry, mechanism, valve gears, dynamics of machines, mechanics, strength of materials, hydraulics, and thermo-dynamics. All the forces of correct theory and the practice of the most successful

builders are brought to bear upon the solution of definite, practical problems.

### STEAM ENGINEERING.

Steam engineering begins in the Junior year and runs through the remainder of the course. A rigorous study of the mathematical theory of thermo-dynamics supplies the foundation for the study of boilers and engines, design and economy, and the various devices and auxiliaries of the power plant. In the Senior year is considered the particular branch of heating and ventilating. In this year, also, the subject of power plants is taken up, which applies all the previous training in steam engineering, and which brings together and unifies all allied subjects.

### EXPERIMENTAL ENGINEERING.

This subject, which extends throughout the Junior and Senior years, is intended to fix the theory developed in all the other lines of work. Instruction is given by means of lectures and laboratory tests. The student becomes familiar with the theory, construction, use, and calibration of the instruments and apparatus used by the engineer, and gains experience in making accurate standard and special tests. The work is divided into four groups: one dealing with the chemical problems of engineering—testing of gases, oils, fuels, feed water, etc.; a second, with general calibration and testing; a third, with the study and tests of structural materials; and the fourth, with general power-plant testing. In power-plant testing the students make the necessary plans and preparations, perform the experimental work, and prepare formal reports, with recommendations for improvement in economy, etc. These tests are made not only on the college power-plants, but on those of manufacturing establishments of the state. The equipment for experimental work comprises several boilers and steam engines, large steam pump, gas engines, feed-water heaters, several steam and gas engine indicators, steam calorimeters, tanks, scales, injectors, water turbine, hydraulic ram, pulsometer, centrifugal pump, belt pump, weirs, two-stage air compressor, air-brake outfit, meters, gauges, 50,000-lb. tension and compression machine, apparatus for oil and gas testing, fuel calorimeter, complete outfit for testing cements and concretes,

etc. Throughout the work the greatest stress is laid upon the correct calculation and interpretation of results, and accuracy and self-dependence are developed to the fullest.

### Subjects.

I. Mechanical Drawing.—Lettering, freehand sketching, use of drafting tools, geometrical problems, projections, machine parts. *Three laboratory credits per week, first term; two laboratory credits per week, second term. Required of Freshmen in Engineering. One and one-half laboratory credits per week, first term. Required of Juniors in Home Economics.* Mr. Martel.

II. Forge and Foundry.—Forging, drawing, bending, welding, etc. Principles of moulding, core making, and casting. *Three laboratory credits per week, first term. Required of Freshmen in Engineering.* Mr. Eldred.

III. Pattern Making.—Use of tools, bench and lathe work, pattern making. *Three laboratory credits per week, second term. Required of Freshmen in Engineering.* Mr. Eldred.

IV. Graphic Statics.—Force and funicula polygons with applications in the determination of stresses in framed structures. *Two recitation credits per week, second term. Required of all Sophomores in Engineering.* Mr. Beamensderfer.

V. Descriptive Geometry.—Elementary principles; problems relating to the point, line, plane, cylinder and double curved surfaces of revolution, intersections, and developments. *One recitation and two laboratory credits per week, first term. Required of all Sophomores in Engineering.* Mr. Beamensderfer.

VI. Mechanical Drawing.—Detail and assembly drawings, elementary machine design. *Three laboratory credits per week, second term. Required of Sophomores in Mechanical, Electrical, and Civil Engineering.* Mr. Beamensderfer.

VII. Machine Shop.—Hand work in chipping and filing, use of machine tools, construction of machines. *Three laboratory credits per week, second term. Required of Sophomores in Electrical Engineering. One and one half laboratory credits per week, second term. Required of Sophomores in Civil Engineering.* Mr. Eldred.

VIII. Machine Drafting.—Technique of machine drafting, application of kinematics to the design of gears, valves, linkages, quick-return motions, etc. *Three laboratory credits per week, first term. Required of Juniors in Mechanical Engineering.* Mr. Beamensderfer.

IX. Heat Engineering—Thermo-dynamics.—Mathematical development and discussion of the laws of thermo-dynamics, and their application to perfect gases, saturated and superheated steam. Theory of air compressors, pneumatic machinery, hot-air engines, gas engines, and refrigerating machines. Boilers, engines, engine economy, effect of cylinder walls, compounding, super-heating, use of jackets, varying cut-off, speed, pressure, etc. Flow of fluids, injectors, and thermo-dynamic principles applied to the steam turbine. *Three*

*recitation credits per week, throughout the year. Required of Juniors in Mechanical and Electrical Engineering; and for twenty-seven weeks, of Juniors in Chemical Engineering. Professor Wales.*

X. Applied Mechanics.—Forces, composition and resolution, parallel forces, moments, couples, centres of gravity, velocity, acceleration, energy and momentum, falling bodies and projectiles, centrifugal force, moment of inertia, radius of gyration, angular momentum, energy of rotating bodies, impact, etc. Strength of materials, stresses in structures, riveted joints, beam theory, struts, columns, shafting, springs, etc. Solution of practical problems. Text, Lanza's Applied Mechanics. *Five recitation credits per week for twenty-four weeks. Required of Juniors in Mechanical, Electrical, and Civil Engineering, and of Juniors in Chemical Engineering for the first term. Professor Wales.*

XI. Hydraulics.—General principles, head and pressure, center of pressure, velocity of discharge, flow through orifices and over weirs, Bernoulli's theorem, flow through pipes, flow through conduits and canals, energy of flow, horse-power, hydraulic machinery, rams, turbines, centrifugal pumps, and Pelton wheels. Merriman's Treatise on Hydraulics. *Five recitation credits per week, for last twelve weeks of second term. Required of Juniors in Mechanical, Electrical, and Civil Engineering. Professor Wales.*

XII. Mechanism.—Instantaneous centers, centroids, lobed wheels, belts, pulleys, four-bar linkages, graphical determination of velocity ratios, quick-return motions, straight-line motions, pantographs, trains of gears, epicyclic trains, tooth gearing, epicycloidal and involute teeth, bevel wheels, etc. Schwamb and Merrill's Mechanism. *Three recitation credits per week, second term. Required of Sophomores in Mechanical and in Chemical Engineering. Mr. Beamensderfer.*

XIII. Valve Gears and Dynamics.—Plane slide valves, piston valves, riding cut-off valves; Joy and Marshall gears; Stephenson, Gooch, and Walscheart link motions; drop cut-off valves; Corliss, Brown, and Putnam valves. Peabody's Valve Gears. Lectures and references. *Three recitation credits per week, second term. Required of Juniors in Mechanical Engineering. Mr. Beamensderfer.*

XIV. Machine Shop.—Advanced work in machine construction. *Three laboratory credit per week, throughout the year. Required of Juniors in Mechanical Engineering. Mr. Eldred.*

XV. Experimental Engineering a.—Lectures and laboratory work in gases, oils, and fuels; flue-gas analysis, calculation of air per pound of coal, loss due to excess air and to imperfect combustion; analysis of fuel gases and calculation of heating values; determination of heating values by the Junkers and Parr calorimeters; study of gases in producer and gas-engine work. Analysis of coal and other fuels. Analysis and testing of lubricating and fuel oils. Testing of boiler waters. *Two laboratory credits, first term. Required of Juniors in Mechanical and Electrical Engineering, and Seniors in Chemical Engineering. Professor Wales.*

XVI. Experimental Engineering b.—General calibration and testing of engineering instruments and apparatus; gauges; planimeter; manometers; indi-



cators; Prony brakes; scales; valve setting by measurement and by the indicator; Carpenter calorimeter; Peabody calorimeter; flow through orifices; weirs; nozzles; Pitot tube; meters; Venturi meters; hydraulic ram; turbine, etc. *Two laboratory credits per week, second term. Required of Juniors in Mechanical, Electrical and Civil Engineering.* Mr. Beamensderfer.

XVII. Experimental Engineering c.—Properties of materials. Lectures on the metallurgy of iron and steel; effects of impurities; cold-working; repeated stresses; tensile, compressive, and shearing strengths; ductility; resilience, etc.; copper, brass, bronze, and other alloys; timber, stone, and brick. The manufacture of natural and Portland cements; effects of over-and under-burning, over-liming,  $\text{SO}_3$ , etc.; discussion of tests and their interpretation. Laboratory work is parallel with lectures. Tensile strengths of cast-iron, wrought-iron, and steel; compressive strength of metals, timber, concrete, cement; shearing tests of metals; transverse tests of timber and iron; stress-strain diagram, elastic limit, yield point, modulus of rupture; tensile tests of cement; pat tests, boiling tests; specific gravity; fineness; time of set, etc. Determination of the best proportions of cement, sand, and rock of given characteristics. *Two lecture and two laboratory credits per week, first term. Required of Seniors in Mechanical, Electrical, and Civil Engineering.* Professor Wales and Mr. Beamensderfer.

XVIII. Experimental Engineering d.—Hot-air engine, gas engine, steam pump, injectors, transmission dynamometers; boiler tests; complete tests of power plants; outside work on the H. P. of a stream, with tests of hydraulic power plant; outside tests of manufacturing plants, with calculations, reports, and recommendations. *Two laboratory credits per week, second term. Required of Seniors in Mechanical and Civil Engineering.* Professor Wales.

XIX. Heating and Ventilation.—Discussion of the principles and practice of the various systems of heating and ventilating—direct and indirect, hot-air, hot-water, pressure steam, exhaust steam, vacuum systems, fans, blowers; calculation of ventilation and radiation; flues, pipes, and radiators; air troubles; central heating systems with central power plants; design of heating system for a given building. *One recitation credit per week, second term. Required of Seniors in Mechanical Engineering.* Professor Wales.

XX. Machine Design.—Design of machine parts from considerations of the motions involved, strength, rigidity, and friction; design of a complete machine; calculations with design of some type of engine, starting with given requirement of H. P., speed, etc., and with an assumed theoretical indicator card. *Three laboratory credits per week throughout the year. Required of Seniors in Mechanical Engineering.* Mr. Beamensderfer.

XXI. Power Plants and Power-Plant Design.—Study of the various types—as to choice, location, installation, and operation; prime movers, their accessories and auxiliaries.

Steam Plants.—Study of the effects on economy, range, and reliability of simple or compound, condensing or non-condensing engines with various valve gears, throttling and cut-off governors, different boiler installations, feed-water



heaters, economizers, pressure regulators, pumps, injectors, mechanical stokers, forced and induced draft, chimneys, etc.; calculations of proper sizes, powers, and strengths of machines and apparatus of the power plant; methods of improving economy. The place of the steam turbine in power-plant work.

Hydro Plants.—Discussion of the types of hydraulic machinery, their efficiency, and the particular conditions to which each is best adapted. This will be a development of the previous work in hydraulics to meet the need of the power engineer.

Gas-Producer Plants.—The different suction and pressure producers, theory, capacity, future, etc.; gas engines, from both the thermo-dynamic and the mechanical points of view. *Two lecture credits and one laboratory credit per week, first term. Required of Seniors in Mechanical Engineering. Two lecture credits per week, first term. Required of Seniors in Electrical Engineering.* Professor Wales.

XXII. Assigned Work.—This may be of the nature of research or of specialized study along some particular line of engineering. Options are offered in theory of elasticity, advanced hydraulics, etc. *Three credits per week, throughout the year. Required of Seniors in Mechanical Engineering.*

XXIII. Dynamics of Machines.—Analysis of stresses, effects of inertia, balance, reciprocating parts, flywheels, design of high-speed engines and machinery. *Two recitation credits per week, second term. Required of Seniors in Mechanical Engineering.* Professor Wales.

XXIV. Works Management.—The economics of the shop and factory, cost-keeping, efficiency in production. *One lecture credit per week, second term. Required of Seniors in Mechanical Engineering.* Professor Wales.

XXV. Elements of Thermo-dynamics.—A non-mathematical discussion of boilers, engines, pumps, and power apparatus for civil engineers. *Three recitation credits per week, first term. Required of Juniors in Civil Engineering.* Mr. Martel.

## Electrical Engineering.

PROFESSOR DICKINSON, ASSISTANT PROFESSOR CLOKE.

The aim of the course in electrical engineering is to give the student such training in the fundamental principles of the subject as will fit him to take up, in an intelligent and effective manner, any line of engineering work requiring special electrical knowledge. Instruction is given in both classroom and laboratory, the aim of each method of instruction being to supplement the other, and to develop resourcefulness and the habit of independent thought on the part of the student.

## Subjects.

I. Theory of Direct Currents.—A detailed study of the theory of direct-current apparatus. The theory of dynamos, motors, and auxiliary apparatus. *Three recitation credits per week, first term. Required of Juniors in Electrical Engineering and of Seniors in Chemical and Mechanical Engineering.* Assistant Professor Cloke.

II. Direct-Current Laboratory.—A course consisting of tests of various types of direct-current apparatus. These include magnetization and characteristic curves of different types of machines, as well as tests for efficiency, regulation, temperature rise, and tests of a similar nature. *Three laboratory credits per week, second term. Required of Juniors in Electrical Engineering and of Seniors in Mechanical Engineering.* Assistant Professor Cloke.

III a. Principles of Electrical Engineering.—A course designed to emphasize the fundamental laws of electric and magnetic circuits. Special attention is given to the units employed, and to methods of measurement. Inductance and capacity are studied at considerable length, and their effects in circuits of variable E. M. F. is discussed. *One recitation credit per week for the last nine weeks of second term, Sophomore year; and one recitation credit per week for eighteen weeks, first term, Junior year. Required of students in Electrical Engineering.* Professor Dickinson.

IV. Theory of Alternating Currents.—Recitations and lectures. The elements of the theory of alternating currents and of alternating-current machinery. This course includes the simpler theories regarding the action of A. C. dynamos, motors, converters, and transformers. *Two recitation credits per week, second term. Required of Juniors in Electrical Engineering and of Seniors in Mechanical Engineering.* Professor Dickinson.

V. Theory of Alternating Currents.—Recitations and lectures, continuing subject IV. The more advanced theories regarding the effect of inductance and capacity in A. C. circuits, and of the action of A. C. machinery, are discussed. Assigned readings and reports are a feature of the subject. *Three recitation credits per week, throughout the year. Required of Seniors in Electrical Engineering.* Professor Dickinson.

VI. Alternating-Current Laboratory.—A course consisting of tests of different types of alternating-current apparatus, such as single and polyphase generators and motors, induction motors, converters, and transformers. *Three laboratory credits per week, throughout the year. Required of Seniors in Electrical Engineering.* Professor Dickinson.

VII. Design of Electrical Machinery.—General principles of the design of electrical apparatus, including a direct and an alternating current generator. *Three laboratory credits per week, second term. Required of Seniors in Electrical Engineering.* Professor Dickinson.

VIII. Telephone Engineering.—A consideration of the development of the modern telephone, with special reference to the common battery systems. *One*

*recitation credit per week, first term. Required of Seniors in Electrical Engineering.* Professor Dickinson.

X. Transmission of Energy.—A study of systems of high-tension distribution, the effect of capacity and inductance, the construction of lines, their protection, and the troubles developing in high-tension work. *Two recitation credits per week, first term. Required of Seniors in Electrical Engineering.* Professor Dickinson.

XI. Electric Railway Engineering.—A discussion of the economic considerations in the development of an electric railway, methods of construction, the location of the generating station, the design of the distributing system, types of motors, and systems of control. *Two recitation credits per week, second term. Required of Seniors in Electrical Engineering.* Assistant Professor Cloke.

XII. Assigned Work.—Thesis work is assigned to those Seniors possessing special aptitude for original research. Other students are assigned special work in the laboratories of the department. *Three laboratory credits per week, throughout the year.* Professor Dickinson.

## Civil Engineering.

PROFESSOR WEBSTER, MR. MARTEL.

It is the purpose of this course to give the student such training in the fundamental principles of engineering as to prepare him for the duties and opportunities that may be offered in the various fields of civil engineering. With this object in view, application of the theories and principles learned in the classroom is made in the field, laboratory, and drafting room. An effort is also made to give the student as liberal a training in the sciences and arts as his limited time will permit, but the primary purpose is to prepare him for one definite line of work.

In order to widen the scope of the student's opportunities, the name of the department has been changed from Highway Engineering to Civil Engineering, and corresponding changes have been made in the course of study. However, owing to the growing importance of highway engineering in this state and throughout the country in general, considerable emphasis is still placed on this phase of engineering work. The state appropriates annually a sum of money, which is expended under the direction of the instructor and students of the department, in the construction and maintenance of roads on the college property. In this way practical experience is obtained in highway engineering.

The equipment of the department consists of levels, transits, compasses, rods, tapes, chains, drafting instruments, etc., and testing

machines, to which the student has access. He also has free use of the library, in which are found the leading engineering journals, and many of the principal works on various engineering subjects.

### Subjects.

I. Surveying.—Instruction is given by means of recitations, field and laboratory work, in the theory, use, and adjustments of the compass, level, and transit. The field work includes the prolongation of straight lines, determination of distances, angles, areas, boundaries, corners, and exercises in leveling, etc. Maps are made from the field notes. *One recitation and two field credits per week, first term. Required of Sophomores in Mechanical, Electrical, and Civil Engineering.*

II. Topographic Surveying.—A study is made of the theory and use of the plane table, and of the transit and stadia in making topographic surveys. A complete topographic survey based on a system of triangulation is made, including the completion of a map. *One recitation and two field credits per week, second term. Required of Sophomores in Civil Engineering.*

III a. Railroad Engineering.—The work consists of a reconnoissance, a preliminary and a location survey of a short line of railroad, for the purpose of giving the student sufficient work to familiarize him with the methods in actual practice. A set of notes is kept by each student, from which a map, a profile, and estimates are made. A study is also made of the properties of curves, switches, frogs, turnouts, and the spiral, and the methods of locating these in the field. *Five credits per week, divided between field and recitation as seems advisable, first term. Required of Juniors in Civil Engineering.*

III b. Railroad Engineering.—The principles of economic railroad construction and maintenance; railway appliances, ballast, and roadbed, culverts and trestles, turnouts, sidings, yards, terminals, signaling, locomotive and grade problems, betterment surveys, etc. *Three recitation credits per week, second term. Required of Juniors in Civil Engineering.*

IV. Graphic Statics.—Instruction is given in graphic statics and its application in the design of simple framed structures. *Two recitation credits per week, first term. Required of Juniors in Civil Engineering.*

V. Roads and Pavements.—The theoretical work of this course consists of a discussion of the principles and details involved in the location, construction and maintenance of earth, gravel, and macadam roads, together with a discussion of the methods of construction, durability, maintenance, and assessment of cost of the various kinds of pavements used on city streets. The field work consists in the construction of a gravel or macadam road on the college grounds. *Three recitation credits and one field credit per week, second term. Required of Juniors in Civil Engineering.*

VI. Bridge Details.—The work in this course consists in making a tracing of a shop drawing, estimating the weight and determining the efficiency of the various members of a highway bridge. *Two laboratory credits per week, first term. Required of Seniors in Civil Engineering.*



VII. Bridge Analysis.—Instruction is given in the computation of stresses in the various types of bridges by graphical and algebraic methods under different conditions of loading. *Two recitation credits per week, first term. Required of Seniors in Civil Engineering.*

VIII. Bridge Design.—The student designs a plate girder and a bridge, makes the shop details, and a set of working drawings. *Three laboratory credits per week, second term. Required of Seniors in Civil Engineering.*

IX. Masonry Construction.—This course deals with the materials of masonry, including brick, stone, lime, and cement; the theory of masonry structures, including foundations for buildings, bridges, and piers; the construction of retaining walls, culverts, bridge abutments; masonry dams and arches. The student is directed to important articles in the current literature of the subject, and a systematic and thorough laboratory course on cement testing is given. *Two recitation credits and one laboratory credit per week, first term. Required of Seniors in Civil Engineering.*

X. Reinforced Concrete—A study is made of the principles of mechanics underlying the design of reinforced concrete. Working stresses and economical proportions are considered, also the application of reinforced concrete construction to building construction, arches, retaining walls, dams, and miscellaneous structures. *Two recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XI. Sewerage.—A discussion of the separate and combined systems of sewers; relation of rainfall to storm-water flow; hydraulics of sewers; removal of house sewage; the design and construction of sewers and method of sewage disposal. *Two recitation credits per week, first term. Required of Seniors in Civil Engineering.*

XII. Water Supply.—A discussion of the quantity of water required, sources of supply, flow of streams, and of ground water. Instruction is also given in the general arrangement of waterworks, loss of head in flow of water through pipes, stresses in dams and water towers. Works for the purification and distribution of water are discussed, including reservoirs, settling basins, pumping machinery, etc. *Three recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XIII. Tunneling.—A study of the methods of making tunnel surveys and of the modern methods employed in tunnel construction. *One recitation credit per week, second term. Required of Seniors in Civil Engineering.*

XIV. Contracts and Specifications.—A study of the fundamental principles of the law of contracts, and their application to engineering work. *Two recitation credits per week, second term. Required of Seniors in Civil Engineering.*

XV. Assigned Work.—With the advice and consent of the head of the department, the student elects three hours' work in the Senior year. This may be research, thesis, or recitation and laboratory work, depending upon the qualifications of the student. *Three credits per week, throughout the year. Required of Seniors in Civil Engineering.*



XVI. Vacation Reading.—Systematic reading during vacations on some topic assigned by the head of this department.

XVII. Metal Structures.—The graphical determination of stresses in steel mill buildings. *One laboratory credit per week, second term. Elective for Seniors in Civil Engineering.*

XVIII. Irrigation Engineering.—This includes a study of the impounding, diverting, flow, and measurement of water, quantity required, canals, canal works, storage reservoirs, waterways, etc. *Three recitation credits per week, first term. Elective for Seniors in Civil Engineering.*

## English.

### Composition, Rhetoric, and Literature.

PROFESSOR BOARDMAN AND PROFESSOR CHURCHILL.

The English department offers subjects in literature and in rhetoric and composition, both written and oral. The required work extends over the four years. Elective subjects in literature are provided for Juniors and Seniors. Both literature and composition courses place emphasis on the practical and the contemporary phases of the work.

The library is an important factor in the work of the department, as it contains some twelve hundred volumes of representative English and American literature.

### Subjects in Literature.

PROFESSOR BOARDMAN.

IV. Modern Essays.—Study of representative essays of England and America in the 19th and 20th centuries. *Four recitation credits per week, first term. Required of Juniors in all courses.*

V. Shakspeare.—A course in appreciation, including lectures on the life of Shakspeare, reading of several plays, and careful study of three plays. *Four recitation credits per week, last twelve weeks of the second term. Required of Seniors in all courses.*

VI. Literature and Composition.—In kind and amount according to individual need. *Not less than two recitation credits per week, first term. Elective for Freshmen.*

VII. The English Novel.—Study of the development and technique of the novel in England. *Two recitation credits per week, second term. Elective as an extra for Juniors and Seniors, with credit in Applied Science and Home Economics courses.*

XI. American Poetry.—An appreciative reading study of American Poetry as a whole, using Stedman's "An American Anthology" as a basis for the work. *Two recitation credits per week, second term. Elective as an extra for Juniors and Seniors, with credit in applied Science and Home Economics courses.*

## Rhetoric and Composition.

PROFESSOR CHURCHILL.

I. Rhetoric and Composition.—Outlines of rhetorical theory, study of models illustrating the various literary forms, exercises, weekly themes. *Three recitation credits per week, throughout the year. Required of Freshmen in all courses.*

II. Newspaper Work.—The technique of structure and style as applied to newspaper methods. Daily practice, special emphasis on editorial paragraph writing, based on the study of current events. *One recitation credit per week, first term. Required of Sophomores in all courses.*

III. Argumentation.—Theory and Practice. Training in the principles of brief-drawing; weekly practice in extemporaneous speaking and debating. *Two recitation credits per week, second term. Required of Sophomores in all courses.*

VIII. Interpretive Reading.—Training in the fundamental principles of pronunciation, articulation, emphasis, inflection, phrasing, quality, force, pitch, rhythm. Besides the ultimate practical purpose, this course is intended to give the necessary preparation for effective public speaking in the courses in debate and oratory during the Junior and Senior years. *One recitation credit per week, first term. Required of Sophomores in all courses.*

IX. Debating.—Instruction and practice in the art of debate. *One recitation credit per week, throughout the year. Required of Juniors in all courses.*

X. Oratorical Writing and Extemporaneous Speaking.—Critical study of representative English and American orations as models; weekly practice in extemporaneous speaking and in the technique of oratorical writing. Criticism on the construction of one long oration. *One recitation credit per week, throughout the year. Required of Seniors in all courses.*

A. Elementary English.—Composition, oral expression, assigned reading. *Five recitation credits per week, throughout the year. Required of Short-Course Students in Agriculture and Domestic Science, first year.*

B. Elementary English.—A continuation of A, including, also, some instruction in civics and economics. *Three recitation credits per week, throughout the year. Required of Short-Course students in Domestic Science, second year.*

## Geology and Mineralogy.

DR. LEIGHTON, ASSISTANT PROFESSOR SMITH, MR. PERRY.

GEOLOGY.—Under this subject historical geology is considered in outline, attention being given, also, to those phases of dynamical

and structural geology which are particularly important. Special attention is given to rock weathering and soil formation, and to those characteristics of rocks which are of chief importance in connection with road construction.

**DETERMINATIVE MINERALOGY.**—A short course dealing with the elements of crystallography is given, together with the physical and chemical characteristics of minerals, especially that of rock-making minerals composing our soils. Laboratory work in blowpipe analysis and physical determination of minerals follows the crystallography.

### Subjects.

I. Geology.—*Two recitation credits per week, second term. Required of Juniors in Civil Engineering and Sophomores in Agriculture.*

II. Mineralogy.—See Chemistry XI.

### History.

PRESIDENT EDWARDS, PROFESSOR CHURCHILL, MISS MYRICK.

I. Social, Economic, and Industrial History of the United States.—*Four recitation credits per week, second term. Required of Juniors in all courses.*

II. Government and Politics in the United States.—*Four recitation credits per week, first term, last six weeks; and second term, first six weeks. Required of Seniors in all courses.*

A. English History. *Three recitation credits per week, throughout the year. Required of students in Domestic Science, second year.*

### Mathematics.

PROFESSOR TYLER, MR. BILLS.

The work in this department covers two distinct phases of mathematical training: the college and the short-course instruction. Throughout the regular college work, emphasis is laid both on the theory and direct application of the different subjects to the problems of engineering and agriculture. An attempt is made to present a working knowledge of arithmetic, algebra, and bookkeeping, to short-course students.

### Subjects.

I. Higher Algebra.—*Five recitation credits per week, nine weeks, first term. Required of all Freshmen. Professor Tyler.*

II. Trigonometry.—*Five recitation credits per week, nine weeks, first term. Required of all Freshmen.* Professor Tyler.

VIII. a. Analytics.—*Five recitation credits per week, second term. Required of Freshmen in Engineering.* Professor Tyler, Mr. Bills.

VIII. b. Analysis.—*Five recitation credits per week, second term. Required of Freshmen in Applied Science.*

X. Calculus.—*Five recitation credits per week, first term. Required of Sophomores in Engineering.* Professor Tyler.

XI. Calculus (completed).—*Five recitation credits per week, second term. Required of Sophomores in Engineering.* Professor Tyler.

XII. University Algebra.—*Three recitation credits per week, first term. Elective for Freshmen.*

XIII. Practical Computations.—*Three recitation credits per week, second term. Elective for Freshmen.*

XIV. Spherical Trigonometry.—*One recitation, first term. Elective as an extra.*

XV. Solid Analytics.—*One recitation, second term. Elective as an extra.*

G. Bookkeeping.—*Four recitation credits per week, first term. Required of Short-Course students in Agriculture, second year; in Domestic Science, first year.* Mr. Bills.

## Military Science and Tactics.

CAPTAIN DOVE.

All male students are required to take military instruction as prescribed, both practical and theoretical, during their attendance at college, unless excused by reason of physical disability. They may, however, be excused after service during four collegiate years. Credit is given for this work on the same basis, and under the same regulations, as in other departments.

For this instruction the War Department furnishes the necessary number of United States magazine rifles, cal. 30, model of 1898 (Krag-Jorgensen pattern), and equipments, and ammunition for gallery practice with the .22 cal. rifle.

The cadet organization this year consists of a batallion of infantry (four companies) and a band.

In the practical instruction infantry drill and training will be considered paramount. The theoretical course is based strictly upon the main object of the military instruction, and will consist largely of talks or lectures, illustrated by lantern slides or objects whenever possible.



The aim of these military exercises is to improve the physique, to inculcate the habit of prompt and cheerful obedience and courtesy to rightfully constituted authority, to exercise an elevating influence on the conduct of the corps of cadets, and as far as possible to qualify students who take the military course to be company officers of infantry, volunteers or militia, if necessary.

For the purpose of holding a competitive drill between the companies to determine the best drilled company, a competitive drill to determine the best drilled private, and such other exercises as may be determined upon, May 29, 1914, has been set aside as Military Day, the afternoon to be devoted to the program as arranged.

The military department is inspected annually by an officer of the General Staff, U. S. Army, detailed from Washington, and the names of such students of the graduating class each year as have shown special aptitude for military service will be reported to the Adjutant General of the Army, and a copy of such report sent to The Adjutant General of each State of which such graduates are residents.

All students in the military department are required to supply themselves, through the commandant, with the prescribed uniform, which consists of dark blue blouse, cap and trousers, white collar and white gloves, military pattern, and black shoes; the insignia of rank of officers and non-commissioned officers to conform to that of the infantry, United States Army.

Uniforms must be worn at all ceremonies, drills, and other forms of practical instruction.

### Subjects.

I. Practical Instruction.—(a) Infantry Drill Regulations, including the school of the squad, of the company, and of the battalion. Intrenchments. Ceremonies and Inspections. (b) Small Arms Firing Manual. Sighting drills position and aiming drills, gallery practice, estimating distance. (c) Field Service Regulations. Orders, advance guards, flank guards, rear guards, outposts, patrolling, and marches and camping whenever possible. (b) Manual of Guard Duty. *Two exercises of one hour each per week, counting as one credit, throughout the year. Required of all the command.*

II. Theoretical Instruction.—United States Infantry Drill Regulations. Small Arms Firing Regulations. Manual of Guard Duty. Field Service Regulations of United States Army. *One recitation credit per week, last nine weeks of first term and first nine weeks of second term. Required of all Freshmen.*

III. Theoretical Instruction.—United States Infantry Drill Regulations, Small Arms Firing Regulations, Manual of Guard Duty, Field Service Regulations



of the United States Army, instruction in the preparation of reports, returns, orders, etc., in the method of correspondence, military map reading and map problems, and, in general, in the duties of company and battalion officers. *One recitation credit per week, first nine weeks of first term, and first nine weeks of second term. Required of all commissioned officers.*

IV. Theoretical Instruction (advanced).—*One recitation credit per week, second nine weeks of first term, and second nine weeks of second term. Elective for all commissioned officers.*

## Modern Languages.

MISS MYRICK.

### FRENCH.

I. Elementary French.—Grammar, dictation, conversation, reading of easy prose and poetry. *Three recitation credits per week, throughout the year.*

II. Reading of intermediate texts, composition, conversation, selections from Hugo's *Les Misérables* or similar work. *Three recitation credits per week, throughout the year.*

III. Scientific and Classical French.—*Three recitation credits per week throughout the year. Elective for students who have taken I and II or their equivalents.*

IV. Scientific French.—*From three to five recitation credits, first term; Freshman year. Elective for Freshmen.*

### GERMAN.

I. Elementary German.—Grammar, dictation, conversation, reading of easy prose and poetry. *Three recitation credits per week, throughout the year. Required of Freshmen who do not offer German for entrance.*

II. Reading of texts portraying German life and institutions, composition, conversation. *Three recitation credits per week, throughout the year. Required of Sophomores in Agriculture, Applied Science, Home Economics, and Chemical Engineering.*

III. Scientific German.—*Three recitation credits per week, throughout the year. Elective for students who have taken I and II or their equivalents.*

IV. Scientific German.—*From three to five recitation credits per week, first term; Freshman year. Elective for Freshmen.*

## Physics.

PROFESSOR DICKINSON, ASSISTANT PROFESSOR CLOKE.

Physics is regarded as a fundamental science, a mastery of which is essential to success in engineering, or in any calling involving the

application of scientific methods and processes. Therefore emphasis is placed upon the practical applications of the principles involved, not only for the purpose of affording preparation for future work, but with the idea of stimulating the student to an interest in his professional work.

At the same time, some effort is made to present the subject from the standpoint of a pure science, and to instill in the student a respect for scientific methods, and to prepare him for advanced work in research and investigation. Advanced mathematics is employed, wherever its use is deemed necessary for a rigorous and complete development of the subject.

Instruction is given in both class-room and laboratory, the two methods being closely correlated. The department is well equipped with high grade apparatus, much of which has been recently imported. In mechanics, special attention is given to problems involved in the application and transmission of power.

In the laboratory of heat measurements, the problems involved in the transformation of heat into useful energy, are strongly emphasized.

In light, the department is able to carry on work of the usual college grade, being well equipped with high grade photometers, spectrometers, interferometers, and refractometers.

The laboratory of electrical measurements is particularly well equipped for the carrying on of advanced work.

### Subjects.

I. Descriptive Physics.—A course designed for students in Agriculture and Home Economics. The course furnishes an excellent foundation for further work in physics. *Five recitation credits per week, second term. Required of Sophomores in Agriculture and Home Economics.* Assistant Professor Cloke.

II. General Physics.—A mathematical treatment of the subject, in which a knowledge of elementary Physics is presupposed. *Four recitation credits per week, throughout the year. Required of all Sophomores in Engineering and Applied Science.* Professor Dickinson.

III. Laboratory Physics.—A course in physical measurements intended to teach students methods and to form a basis for future engineering work. The calculation of results will be given special attention. *One and one-half laboratory credits per week, throughout the year. Required of Sophomores in Engineering and Applied Science.* Assistant Professor Cloke.

V. Electrical Measurements.—Direct-current measurements, resistance, potential current, magnetic properties of iron and steel, calibration of direct-current

instruments. *One and one-half laboratory credits per week, first term. Required of Juniors in Electrical Engineering.* Assistant Professor Cloke.

VI. Principles of Illumination.—A study of different sources of light, the measurements of candle power, and the principles of illuminating engineering. *One recitation credit and one and one-half laboratory credits per week, first term. Required of Juniors in Electrical Engineering.* Assistant Professor Cloke.

## Physical Training.

MISS BAILEY.

All women students are required to attend the gymnasium exercises. These are designed to improve the general health of the young women and to train them in agility, poise and general gracefulness, and to develop alertness and a ready response to any order or request. The exercises are confined to the lighter work of a gymnasium because of a lack of other equipment.

I. Marching; free arm exercises; wand and dumb-bell exercises; Indian club swinging. *One laboratory credit per week, throughout the year. Required of all women students.*

## Woodwork.

MR. T. C. RODMAN.

H. Farm Buildings.—A practical course in the planning of farm structures, estimating quantities of material required, and costs. *One shop credit per week, second term. Required of Short-Course students in Agriculture, second year.*

I. Shopwork.—Woodworking at the bench and lathe. *One and one-half shop credits per week, second term. Required of Short-Course students in Agriculture, first year.*

## Zoölogy.

PROFESSOR BARLOW.

The work in this department is designed to meet the needs of two classes of students, those who are interested in the economic aspect of animal life and those who purpose to become teachers. To meet the needs of the first class, subjects are given which are planned to call attention to the economic importance of the different orders. Much time is allotted to entomology, and in this subject special attention is given to injurious species. For those who are to be teachers, a thorough training is given in the morphology and

classification of animals as a preparation for the more special subjects that follow. In these, attention is directed to the habits and relations of animals, which are studied both in the field and laboratory.

The laboratory is equipped with a series of charts, valuable models, and many mounted skeletons. The Rhode Island birds are represented by mounted specimens of practically every species; fishes, reptiles, and batrachians, by alcoholic preparations. The collection of insects, begun recently, now fills about one hundred cases, and is being steadily increased. Each student is given the use of compound and dissecting microscopes. The necessary instruments for laboratory work can be procured at small cost at the college store.

### Subjects.

I. General Zoölogy.—Discussion of the more important laws of biology and the dissection of representatives of the more important Phyla. *Two laboratory and two recitation credits per week, first term. Required of Sophomores in Agriculture, Home Economics, and Applied Science.*

II. General Zoölogy.—Special attention is given to the relation of animals to their surroundings. *Two laboratory credits and one recitation credit per week, second term. Option for Seniors in Applied Science.*

III. Physiology.—The physiology of the higher mammals. *One laboratory and three recitation credits per week, second term. Required of Sophomores in Agriculture, Home Economics, and Applied Science.*

IV. Economic Entomology.—*One laboratory and three recitation credits per week, second term. Option for Juniors in Agriculture and Applied Science.*

V. General Entomology.—*Two laboratory credits and one recitation credit per week, first term; two recitation and two laboratory credits per week, second term. Option for Seniors in Applied Science.*

VI. Systematic Entomology.—*Three or five laboratory credits per week, throughout the year. Elective for those who are taking or have taken Zoölogy V.*

VII. Vertebrate Anatomy.—*Three laboratory credits per week, first term. Required of Juniors in Home Economics. Option for Juniors in Applied Science.*

VIII. Histology and Embryology.—*Three laboratory and two recitation credits per week, second term. Required of Juniors in Home Economics. Option for Juniors in Applied Science.*

IX. Methods in Nature Study.—Bird life, habits of insects, aquaria. *One and one-half laboratory or field credits per week, second term. Elective.*

A. Elementary Zoölogy.—Deals with forms of economic importance. *Three recitation and one and one-half laboratory credits per week, first term. Required of Short-Course students in Agriculture and Domestic Science, first year.*

## Student Organizations.

### Athletic Association.

LEROY ALLEN WHITTAKER.....	President.
WESLEY CROWELL BRIGHAM.....	Vice-President.
WILLIAM EARL DODGE.....	Secretary.
PROFESSOR BARLOW.....	Treasurer.

### Agricultural Club.

WILLIAM EDWIN ANDERSON.....	President.
CARLISLE HALL.....	Vice-President.
GEORGE GARNER GUINNESS.....	Secretary.
MYRON ANGELL HAWKINS.....	Treasurer.

### Debating Society.

EDWARD JAMES BOULESTER.....	President.
HENRY ELLIS DAVIS.....	Vice-President.
DANIEL GASKILL ALDRICH.....	Secretary.
HENRY EDMOND MEDBERY.....	Treasurer.

### Glee Club.

EARL CLIFTON WEBSTER.....	Manager.
CLIFFORD ARNOLD ALLENSON.....	Leader.

### Lecture Association.

HAROLD WILLIAM BROWNING.....	President.
PROFESSOR CHURCHILL.....	Treasurer.

### Student Council.

HENRY ELLIS DAVIS.....	President.
FRANK HOWARD BAXTER.....	Vice-President.
ROYAL CARLTON HUDSON.....	Secretary-Treasurer.

### Dramatic Club.

JOHN LEO SULLIVAN.....	President.
RAYMOND LIVINGSTON BARNEY.....	Vice-President.
OLIVE MARGUERITE DATSON.....	Secretary.
MYRON WHITMARSH FINCH.....	Treasurer.



## Young Men's Christian Association.

MYRON WHITMARSH FINCH.....	President.
EARL CLIFTON WEBSTER.....	Vice-President.
GORDON FENN PYPER.....	Secretary.
ERNEST GEORGE FIELD.....	Treasurer.

## Young Women's Christian Union.

HELEN WHEELER FORD.....	President.
ADA LAPLACE HARDING.....	Vice-President.
OLIVE MARGUERITE DATSON.....	Secretary.
EMILIE MAY CURRAN.....	Treasurer.

## BATTALION ORGANIZATION, MARCH, 1914.

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**Commandant:**

WILBUR E. DOVE, Captain, United States Army.

## CADET OFFICERS AND NON-COMMISSIONED OFFICERS.

*Battalion.*

Major .....	WILLIAM H. TULLY.
First Lieutenant and Adjutant .....	FRANK H. BAXTER.
Second Lieutenant, Quartermaster and Commissary .....	EDWARD J. BOULESTER.
Sergeant-Major .....	NORMAN H. BORDEN.
Quartermaster Sergeant .....	HERMAN H. KARMANN.
Color Sergeant .....	FRED O. ASPINWALL.
Color Sergeant .....	ROBERT J. BENSON.

*Company A.*

Captain .....	WILLIAM H. WEBB.
First Lieutenant .....	HAROLD W. BROWNING.
Second Lieutenant .....	MILTON H. PRICE.
First Sergeant .....	CURTIS W. GATES.
Sergeant .....	WESLEY C. MILLER.
Sergeant .....	CARLETON W. JONES.
Corporal .....	FRANKLIN P. GODDARD.
Corporal .....	ERNEST G. FIELD.
Corporal .....	ALFRED P. KIVLIN.
Corporal .....	FRANK A. FARON.
Corporal .....	ERNEST E. REDFERN.

*Company B.*

Captain .....	JAMES R. ESTY.
First Lieutenant .....	EARL C. WEBSTER.
Second Lieutenant .....	MYRON W. FINCH.
First Sergeant .....	WILLIAM E. LEWIS.
Sergeant .....	FRANK E. TABOR.
Sergeant .....	HARRY O. NORDQUIST.
Corporal .....	EVAN B. JANSON.
Corporal .....	CARLISLE HALL.
Corporal .....	DEAN B. FRASER.
Corporal .....	THOMAS W. FREEMAN.
Corporal .....	PHINEAS M. RANDALL, Jr.

*Company C.*

Captain.....	HENRY E. DAVIS.
First Lieutenant.....	LORENZO F. KINNEY, JR.
Second Lieutenant.....	JOHN BRECHIN.
First Sergeant.....	JOHN L JACKOWITZ.
Sergeant.....	ROBERT W. BELFIT.
Sergeant.....	RAYMOND L. BARNEY.
Corporal.....	LEONARD H. MAILLOUX.
Corporal.....	CLARENCE H PARKER.
Corporal.....	EARL WALMSLEY.
Corporal.....	CLIFFORD A. ALLENSON.
Corporal.....	ROYAL C. HUDSON.

*Company D.*

Captain.....	GEORGE H. BALDWIN.
First Lieutenant.....	HERBERT REINER.
Second Lieutenant.....	LEROY A. WHITTAKER.
First Sergeant.....	EUGENE J. FLAHERTY.
Sergeant.....	RALPH L. PARKER.
Sergeant.....	HENRY D. MUNROE.
Corporal.....	HENRY C. KELLY.
Corporal.....	JAMES M. HENRY.
Corporal.....	RICHARD W. WESTON.
Corporal.....	WESLEY C. BRIGHAM.

*Band.*

Chief Musician.....	ALBERT C. HUNTER.
Principal Musician.....	CHESTER W. RUGG.
Drum Major.....	LAWRENCE F. KEITH.
Sergeant.....	JOSEPH E. NICHOLS.
Sergeant.....	JOHN PREMO.
Corporal.....	FRANK J. LENNOX.
Corporal.....	KENNETH C. HAYWARD.

## Alumni Association.

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RANDOLPH HAYWOOD CARPENTER, 1910.....President.  
New York City.

GEORGE ALBERT RODMAN, 1894.....Vice-President.  
New Haven, Conn.

HOWLAND BURDICK, 1895.....Secretary-Treasurer.  
Kingston.

### *Executive Committee.*

RANDOLPH H. CARPENTER, 1910.....HOWLAND BURDICK, 1895.  
GEORGE A. RODMAN, 1894.....NELLIE H. ARNOLD, 1905.  
HENRY N. BARLOW, 1912.

## Prizes and Honors.

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### THE KINGSTON PRIZES.

The sum of sixty dollars offered by a friend of the college to encourage literary work among the students, was divided in 1913 into three portions, providing a first prize of twenty-five dollars, a second of twenty, and a third of fifteen dollars, for the best essays submitted in a contest held in June, 1913. The awards were as follows:

#### FIRST PRIZE:

The Trusts, James Hannibal Young.

#### SECOND PRIZE:

The Negro Problem of the South, Frank Harold Briden.

#### THIRD PRIZE:

Facts and Fiction Regarding Foods and Food Values, Helen Wheeler Ford.

### HONORS.

Honors awarded Commencement Day, June 19, 1913:

#### FINAL HONORS FOR FOUR YEARS:

High Honors—Marguerite White Elkins, Dorothy Dearborn Elkins, Ralph Irwin Alexander.

Honors—Arthur Leslie Reynolds, James Hannibal Young.

#### SENIOR HONORS.

Dorothy Dearborn Elkins,  
Frank Harold Briden,  
Clarence Elmer Brett,  
Ralph Irwin Alexander,  
Marguerite White Elkins,  
Irving Calvary Mitchell,  
Susie Stanton Wood,

#### JUNIOR HONORS.

Harold William Browning,  
Adelaide Gilbert Watson,  
Lorenzo Foster Kinney, Jr.,  
James Hilton Aldred,  
Helen Wheeler Ford,  
Leroy Allen Whittaker,  
Louis Rossi,  
John Leo Sullivan,  
Myron Angell Hawkins.



## SOPHOMORE HONORS.

Norman Harrison Borden,  
Robert William Belfit,  
Wesley Clifton Miller,  
Curtis Wolcott Gates,  
Joseph Elton Nichols,

## FRESHMAN HONORS.

Charles Edward Seifert.  
Homer Ranson Rowell,  
Carleton Webb Short,  
Leonard Hormisdas Mailloux.

## Degrees Conferred in 1913.

## Bachelor of Science.

Ralph Irwin Alexander,  
Clarence Elmer Brett,  
Benjamin Cohen,  
John William Corr,  
Marguerite White Elkins,  
Walter Colwell Irons,  
Irving Calvary Mitchell,  
Waldo Reiner,  
George Edwin Slocum,  
Walter Raymond Turner,  
Susie Stanton Wood,

Reuben Charles Bates,  
Frank Harold Briden,  
Esther Loomis Congdon,  
Dorothy Dearborn Elkins,  
Crawford Peckham Hart,  
Thomas Kyle,  
William Francis Redding,  
Arthur Leslie Reynolds,  
Frank Steck,  
Erroll Kenyon Wilcox,  
James Hannibal Young.

## Certificates Awarded in 1913.

## Short Course in Agriculture.

Frank Arthur Carroll,  
Harold Corbin Jones.

## Students.

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### Graduates.

Caldwell, Dorothy Walcott (B. S., R. I. S. C., 1912).....	Kingston.
Earl, Laura Brown (A. B., Radcliffe, 1904).....	Kingston.
Elkins, Marguerite White (B. S., R. I. S. C., 1913).....	Kingston.
Heath, Bertha May (B. S., R. I. S. C., 1910).....	Kingston.
Tucker, Ellen Capron (B. S., R. I. S. C., 1909).....	Kingston.

### Seniors.

Aldred, James Hilton, Mech. Eng.....	Ashton.
Anderson, William Edward, Agr.....	Westerly.
Aspinwall, Frederick Otto, Chem. Eng.....	Pawtucket.
Baxter, Frank Howard, Mech. Eng.....	Kingston.
Benson, Robert John, Elec. Eng.....	Kingston.
Boulester, Edward James, Appl. Sci.....	Providence.
Browning, Harold William, Appl. Sci.....	Matunuck.
Connor, Thomas Rowley, Civ. Eng.....	Peace Dale.
Davis, Henry Ellis, Agr.....	Edgewood.
Esty, James Russell, Chem. Eng.....	Slatersville.
Finch, Myron Whitmarsh, Agr.....	Providence.
Ford, Helen Wheeler, Home Econ.....	North Easton, Mass.
Hawkins, Myron Angell, Agr.....	Providence.
Jones, Carleton Walter, Civ. Eng.....	Providence.
Karmann, Herman Harry, Civ. Eng.....	Providence.
Kinney, Lorenzo Foster, Jr., Appl. Sci.....	Kingston.
Reiner, Frieda, Home Econ.....	Brooklyn, N. Y.
Reiner, Herbert, Agr.....	Kingston.
Rossi, Louis, Civ. Eng.....	Westerly.
Safford, Edith Marie, Home Econ.....	Lancaster, Mass.
Soong, Aloy, Appl. Sci.....	Canton, China.
Sullivan, John Leo, Mech. Eng.....	Lonsdale.
Tully, William Henry, Appl. Sci.....	Peace Dale.
Turner, Harvey Robert, Civ. Eng.....	Providence.
Webb, William Harry, Elec. Eng.....	Howard.
Webster, Earl Clifton, Civ. Eng.....	Providence.

### Juniors.

Baldwin, George Holland, Agr.....	Valley Falls.
Barney, Raymond Livingston, Appl. Sci.....	Providence.
Belfit, Robert William, Chem. Eng.....	Kingston.
Borden, Norman Harrison, Chem. Eng.....	Providence.

Brechin, John, Mech. Eng.	Bristol.
Brownell, Kenneth Allen, Chem. Eng.	Adamsville.
Cloke, Philip Royal, Elec. Eng.	Kingston.
Coleman, Carl Lafayette, Agr.	Orange, Mass.
Dodge, William Earl, Mech. Eng.	Providence.
Gates, Curtis Wolcott, Chem. Eng.	Kingston.
Hall, Carlisle, Agr.	Providence.
Harding, Ada LaPlace, Home Econ.	Lyme, Conn.
Harris, Leon Irving, Elec. Eng.	Kingston.
Hudson, Royal Carlton, Appl. Sci.	Phenix.
Hunter, Albert Clayton, Appl. Sci.	East Providence.
Jackowitz, John Louis, Appl. Sci.	East Providence.
Keith, Lawrence Fuller, Agr.	Brockton, Mass.
Kelly, Henry Clinton, Civ. Eng.	Nayatt.
Kivlin, Alfred Patrick, Elec. Eng.	Kingston.
Lennox, Frank Joseph, Chem. Eng.	Woonsocket.
Miller, Wesley Clifton, Elec. Eng.	Providence.
Nichols, Joseph Elton, Mech. Eng.	Woonsocket.
Nordquist, Harry Oscar Valdemar, Civ. Eng.	Providence.
Parker, Ralph Langley, Agr.	Kingston.
Price, Milton Harris, Agr.	Providence.
Tabor, Frank Edward, Mech. Eng.	Slatersville.
Watson, Adelaide Gilbert, Home Econ.	Peace Dale.
Whittaker, Leroy Allen, Elec. Eng.	Central Falls.
Wilcox, Harold Clayton, Agr.	Kingston.

### Sophomores.

Albro, Roland Gould, Elec. Eng.	Peace Dale.
Aldrich, Daniel Gaskill, Agr.	Georgiaville.
Allenson, Clifford Arnold, Elec. Eng.	Central Falls.
Anthony, Harold Congdon, Agr.	Newport.
Brigham, Wesley Crowell, Chem. Eng.	Pawtucket.
Burr, Dorothy Isabelle, Home Econ.	East Providence.
Carleton, Everett Augustus, Agr.	Greenwood, Mass.
Chantler, Ambrose Royle, Chem. Eng.	Pawtucket.
Clarke, Helena Frances, Appl. Sci.	East Greenwich.
Conyers, Clarence John, Agr.	Providence.
Cordin, Gilbert Ralph, Chem. Eng.	Providence.
Curran, Emilie May, Home Econ.	Pawtucket.
Daniels, Henry Fales, Civ. Eng.	Pawtucket.
Datson, Olive Marguerite, Home Econ.	Westerly.
Donovan, Lillian Marguerite, Appl. Sci.	Westerly.
Easterbrooks, Wilfred Ross, Civ. Eng.	Wakefield.
Faron, Frank Aloysius, Elec. Eng.	Woonsocket.
Field, Ernest George, Mech. Eng.	Providence.
Flaherty, Eugene Joseph, Elec. Eng.	Kingston.
Fraser, Dean Blenus, Civ. Eng.	Brockton, Mass.

Freeman, Thomas William, Civ. Eng.	Fort Adams.
Glasheen, Ralph Earle, Civ. Eng.	Brockton, Mass.
Goddard, Franklin Perry, Elec. Eng.	Newport.
Guinness, George Garner, Agr.	Providence.
Hawkins, Clinton Dexter, Chem. Eng.	Pawtucket.
Hayward, Kenneth Chase, Civ. Eng.	South Easton, Mass.
Henninger, Roswell Woodward, Agr.	Williamsport, Pa.
Henry, James Murray, Mech. Eng.	Stonington, Conn.
Hill, Edwin Douglas, Agr.	Providence.
Holley, Leonard Stanley, Agr.	Peace Dale.
Hoxsie, Annie Sarah, Home Econ.	Canochet.
Kirk, Robert Charles, Civ. Eng.	Pawtucket.
Lagerstedt, Seth Frederick Hadley, Agr.	Brockton, Mass.
Leonard, Edgar Babcock, Agr.	Providence.
Lewis, William Emanuel, Agr.	East Providence.
Lloyd, Lester William, Agr.	Chester, Mass.
Lussier, George Emile, Elec. Eng.	Woonsocket.
Mailloux, Leonard Hormisdas, Elec. Eng.	Woonsocket.
McIntosh, Albert Edward, Civ. Eng.	Providence.
Medbery, Henry Edmond, Agr.	East Providence.
Meears, Etta Elizabeth, Home Econ.	Kingston.
Milnes, Charles Irving, Chem. Eng.	Providence.
Mowry, Harold Conrad, Civ. Eng.	North Scituate.
Munroe, Henry Dodge, Agr.	Campello, Mass.
Noyes, Edwin Roy, Elec. Eng.	East Greenwich.
Palmer, Theodore Andrew, Agr.	Hope Valley.
Parker, Clarence Howard, Mech. Eng.	Brockton, Mass.
Premo, John, Appl. Sci.	Wakefield.
Randall, Bertha Adelaide, Home Econ.	Providence.
Randall, Phineas Munsell, Jr., Elec. Eng.	Westerly.
Redfern, Ernest Elmer, Chem. Eng.	Woonsocket.
Rowell, Homer Ranson, Agr.	Groveland, Mass.
Rugg, Chester Warren, Civ. Eng.	Kingston.
Scott, Rust, Mech. Eng.	Providence.
Seifert, Charles Edward, Elec. Eng.	Chepachet.
Short, Carleton Webb, Chem. Eng.	East Providence.
Smith, Harold Burlen, Appl. Sci.	Brockton, Mass.
Steere, Edith Tinkham, Home Econ.	Providence.
Sullivan, Daniel Leo, Civ. Eng.	Providence.
Sweet, Russell Herndon, Appl. Sci.	Wakefield.
Victory, Thomas Francis, Elec. Eng.	Warren.
Walmsley, Earl, Chem. Eng.	Anthony.
Young, Vincent Case, Mech. Eng.	Bristol.

### Freshmen.

Adams, Lawrence Ebenezer, Agr.	Wickford.
Allenson, Chester Williams, Elec. Eng.	Central Falls.

Ames, Arnold Willard, Eng.	Westerly.
Anderson, John Gordon, Agr.	Westerly.
Arnold, Cranston Tourtellot, Agr.	Providence.
Ash, Richard Palmer, Eng.	Bridgewater, Mass.
Barrows, Henry Harold, Agr.	New Haven, Vt.
Barrows, Lucius Crosby, Eng.	New Haven, Vt.
Bartels, Henry Arthur, Agr.	New York, N. Y.
Browne, Elizabeth Hope, Home Econ.	Pawtucket.
Caracausa, Albert Christopher, Eng.	New London, Conn.
Champlin, Edith Eliza, Home Econ.	Narragansett Pier.
Clark, James Andrew, Eng.	Providence.
Cohen, Harry, Eng.	Brockton, Mass.
Comi, Peter Joseph Anthony, Eng.	Westerly.
DeMay, Winfred West, Eng.	Wethersfield, Conn.
Dubois, Constance Glenmore Church, Home Econ.	Providence.
Dunham, Leslie Lincoln, Eng.	Brockton, Mass.
Durfee, Carroll Augustus, Appl. Sci.	North Scituate.
Ebbs, Robert Allen, Chem. Eng.	Newport.
Edmonds, Charles Joseph, Eng.	Olneyville.
Fearn, George Andrew, Eng.	Pawtucket.
Fine, Solomon, Agr.	Attleboro, Mass.
Finley, Harold Elman, Eng.	Pawtucket.
Flynn, William Augustus, Eng.	Providence.
Fritsch, William Norman, Eng.	Providence.
Fuller, Marion Pauline, Home Econ.	Groveland, Mass.
Gibbs, Omar Bradford, Eng.	Warren.
Gibbs, Ralph William, Eng.	West Barrington.
Gillis, William Ellis, Eng.	East Providence.
Gordon, Beale Mitchell, Eng.	Providence.
Greenhalgh, Frank Elmer, Eng.	Chepachet.
Griffith, Robert Fessenden, Agr.	Barrington.
Guidone, Erel Linguite, Appl. Sci.	New London, Conn.
Hall, Reuben, Eng.	Edgartown, Mass.
Hanlin, William Frank, Agr.	Arlington.
Harris, Leroy Grant, Agr.	Providence.
Harry, Charles Edward, Jr., Agr.	East Providence.
Hayward, Marchmont, Agr.	Providence.
Hope, Earl Joseph, Civ. Eng.	Woonsocket.
Hoxie, Dorothea Marion, Appl. Sci.	Phenix.
Inman, James Olney, Eng.	Bridgeton.
Karlson, John Theodore, Eng.	Orange, Mass.
Keegan, Leslie Arthur, Eng.	Pascoag.
Kendall, Donald John, Agr.	Brockton, Mass.
Knowles, Ralph Sheridan, Agr.	Providence.
Lahn, Abraham Samuel, Eng.	Pawcatuck, Conn.
Lawrence, Samuel Eugene, Appl. Sci.	New London, Conn.
Le Boeuf, Albert Alphonse, Agr.	Fall River, Mass.
Lewis, Elsie Ann, Home Econ.	Wickford.



Longton, Robert Thomas, Eng.....	Brockton, Mass.
Martin, Edward Francis, Agr.....	Providence.
Maxfield, Dorothy Thornton, Home Econ.....	Barrington.
McCormick, John Lawrence, Eng.....	Glendale.
McGill, John Henry, Eng.....	Woonsocket.
McGunagle, Anna Loretta, Home Econ.....	Central Falls.
Murphy, James Aloysius, Eng.....	Woonsocket.
Murray, Arthur Lawrence, Appl. Sci.....	New London, Conn.
O'Brien, Ralph Mark, Eng.....	Providence.
O'Bryne, Christopher James, Eng.....	Brockton, Mass.
Olsen, Chester Arthur, Eng.....	Providence.
Pahline, David Lambert, Eng.....	East Providence.
Phelon, William Curtis, Agr.....	Westfield, Mass.
Pyne, Francis James, Eng.....	Brockton, Mass.
Redford, David Adam, Eng.....	Pawtucket.
Reiner, Harry Victor, Eng.....	Newark, N. J.
Rice, Clifford Murdock, Agr.....	Brockton, Mass.
Rieckel, Grace Lillian, Home Econ.....	Providence.
Rodman, Samuel Lyman, Agr.....	Gould.
Ryan, Helen Margaret, Home Econ.....	Wickford.
Scott, Marion Isadore, Home Econ.....	Providence.
Slocum, Kenneth Matteson, Civ. Eng.....	Central Falls.
Smith, Lester Lawrence, Eng.....	Noank, Conn.
Smoot, Philip, Eng.....	Portsmouth.
Spencer, James Benjamin, Eng.....	East Greenwich.
Taylor, Raymond Douglas, Agr.....	Westerly.
Tew, Joseph Gardiner, Eng.....	Phenix.
Thayer, Aubrey Harvey, Eng.....	Nasonville.
Tillinghast, Theose Elwin, Eng.....	Westerly.
Tompkins, Frederick Neale, Eng.....	Pawtucket.
Townes, Eben Gordon, Appl. Sci.....	Brockton, Mass.
Trimble, George, Eng.....	Wakefield.
Welles, Ashbel Russell, Agr.....	Wethersfield, Conn.
Wild, Arthur, Eng.....	Danielson, Conn.
Williamson, James Hugh, Eng.....	Newport.
Wisbey, Herbert Andrew, Agr.....	Rumford.
York, Marion Read, Home Econ.....	Pawtucket.

### Irregular.

Cooper, Olive Etta.....	Providence.
Fleagle, Ruth Ellen, Home Econ.....	Baltimore, Md.
Forman, Howard Lee, Agr.....	Brooklyn, N. Y.
Goddard, Archie Coggeshall, Agr.....	Kingston.
Lewis, George Mitchell, Appl. Sci.....	Kingston.
McLeod, Leander Wallace, Mech. Eng.....	Providence.
Murphy, Orville Duane, Special Agr.....	Ashaway.

Newton, Leroy Burgess, Civ. Eng.	West Barrington.
Sherwin, Leroy Merton, Agr.	Kingston.
Weston, Richard Ward, Agr.	West Bridgewater.

### Short Courses.

Aldred, William, Agr.	Ashton.
Baldwin, Miles Edward, Jr., Agr.	Providence.
Barclay, William McKay, Agr.	Melville.
Cassidy, Mark Anselm, Agr.	Woonsocket.
Champlin, William James, Agr.	Slocums.
Chappell, Henry Browning, Agr.	Saunderstown.
Deahy, David Joseph, Agr.	Valley Falls.
Dolliver, John Adams, Agr.	Newport.
Dunbar, Alexander, Jr., Agr.	Providence.
Ebbs, Lawrence Knight, Agr.	Newport.
Fernandez, John Henry, Agr.	North Tiverton.
Haas, William Rudolph, Agr.	Newport.
Janson, Evan Beaumont, Eng.	Woonsocket.
Lane, John Raymond, Agr.	Pawtucket.
Leslie, John Francis, Agr.	Wakefield.
McConnell, Elbert Lowene, Agr.	Brooklyn, N. Y.
Moore, Gladys Maude, Dom. Sci.	Auburn.
Norman, Edward James, Jr., Agr.	Lee, Mass.
O'Neil, Michael Joseph, Mech. Eng.	Providence.
Peckham, Laurence Stedman, Agr.	Newport.
Peckham, Rowland Thomas, Agr.	Melville.
Powell, Milford George Woodfield, Agr.	Fall River, Mass.
Pyper, Gordon Fenn, Agr.	Conimicut.
Shedd, Carl Henry, Agr.	East Providence.
Simmons, John Lawton, Agr.	Melville.
Steacie, Edward, Jr., Agr.	Dorchester, Mass.
Tanner, Edmund Johnson, Agr.	Carolina.
Tillotson, Irving Smith, Agr.	Providence.
Waller, Mary Robinson, Dom. Sci.	Stafford, Va.
Warden, Harold Colville, Agr.	Adamsville.
Weir, Helen Margaret, Dom. Sci.	West Kingston.

### Special Poultry Course.

Allwood, John.	Anthony.
Anderson, Robert.	Providence.
Barton, Edward H.	Providence.
Bartlett, Albert A.	Wickford.
Boyden, L. E.	Mansfield, Mass.
Brady, Joseph.	New York City.
Clark, Ernest C.	Howard.
Cook, Harland Stanley.	Groveland, Mass.

Cook, Herbert S. ....	Woonsocket.
Connell, Michael. ....	Westerly.
Dutton, Charles H. ....	Providence.
Langley, F. E. ....	Wakefield.
Lawrence, J. Marshall. ....	Lawrence, Mass.
Miller, C. W. ....	Westerly.
Peterson, Clyde F. ....	West Barrington, Mass.
Sherman, Edwin Sidney. ....	Saylesville.
Walmsley, Lester. ....	Anthony.
Zedren, Frank W. ....	Cranston.

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## Graduates.\*

1894.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ADAMS, GEORGE EDWARD . . . Kingston.	Agr.	Professor of Agronomy, R. I. S. C.
AMMONDS, GEORGE CLARENCE . . 54 Eliot St., Boston, Mass.	Mech.	Railroad Postal Clerk, on N. Y., N. H. & H. R. R.
ARNOLD, CHAPIN TRAFFORD . . . 52 Wood St., Providence.	Agr.	Electrical Contractor, Office 26 Custom House St., Providence.
BURLINGAME, GEO. WASHINGTON . R. F. D. No. 2, Box 56, North Scituate.	Agr.	Farmer and Teacher.
CLARK, HELEN MAY (Mrs. Wm. F. B. LEAVITT), B. L., Smith Col- lege, 1899. Essex Fells, New Jersey.		At home.
KNOWLES, JOHN FRANKLIN . . . Narragansett Pier.	Mech.	With The Bristow Bros., Knowles Corporation.
†MADISON, WARREN BROWN . . .	Agr.	
MATHEWSON, ERNEST HOXSIE . . Ph. B., Brown University, 1896. Reidsville, North Carolina.	Mech.	Crop Technologist in Tobacco, U. S. Department of Agriculture.
PECKHAM, REUBEN WALLACE . . . Melville Station, Newport.	Agr.	Market Gardener.
RATHBUN, WILLIAM SHERMAN . . . Northampton, Mass.	Agr.	With Printing Department, Eureka Ruling and Binding Co., Hol- yoke, Mass.
RODMAN, GEORGE ALBERT . . . New Haven, Conn.	Mech.	General Supervisor, Bridges and Buildings, Union Station, N. Y., N. H. & H. R. R. Co.
SARGENT, CHARLES LAWRENCE . . Ph. D., University of Pennsylvania, 1900. 9 Thomas St., Newark, New Jersey.	Agr.	Superintendent, Color Department, Murphy Varnish Co.
SLOCUM, SAMUEL WATSON . . . 130 West Broad St., Westerly.	Agr.	Carpenter.
SPEARS, JOHN BARDEN . . . Foster Centre.	Agr.	Rural Letter Carrier.

\*It is earnestly desired that graduates inform the college office of any permanent change of address.

+ Deceased.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
SWEET, STEPHEN ADELBERT . . . Slocums.	Agr.	Farmer.
TUCKER, GEORGE MASON . . . Ph. D. Göttingen, 1899. Forest Glen, Md.	Agr.	Editorial Staff, Experiment Station Record, U. S. Department of Agriculture, Washington, D. C.
WILBUR, ROBERT ARTHUR . . . East Greenwich.	Mech.	Carriage-maker and blacksmith.

## 1895.

*ALBRO, LESTER FRANKLIN . . .	Agr.	
BURDICK, HOWLAND . . . .	Agr.	Assistant Professor of Dairying, R. I. S. C.
CLARKE, CHARLES SHERMAN . . . Jamestown.	Mech.	Marine Engineer.
ELDRED, MABEL DEWITT . . . Kingston.		Instructor in Drawing, R. I. S. C.
HAMMOND, JOHN EDWARD . . . Jamestown.	Agr.	Farmer.
OATLEY, LINCOLN NATHAN . . . Wakefield.	Mech.	Contractor and builder; Coal Dealer.
SCOTT, ARTHUR CURTIS . . . . Ph. D., Univ. of Wisconsin, 1902. Dallas, Texas.	Mech.	President, Scott Engineering Co., 632 Wilson Building.
TEFFT, JESSE COTTRELL . . . . Jamestown.	Mech.	Purser, Newport and Jamestown Ferryboat Co.
WINSOR, BYRON EDGAR . . . . Coventry.	Mech.	Poultryman.

## 1896.

BROWN, MAY (MRS. CHARLES A. WHITE). Narragansett Pier.		At home.
GREENMAN, ADELAIDE MARIA (MRS. R. WALLACE PECKHAM) . Melville Station, Newport.		At home.
KENYON, ALBERT LEWIS . . . . 35 Chestnut St., South Manchester, Conn.	Mech.	Capitalist.
MOORE, NATHAN LEWIS CASS . . . Venice, Florida.	Agr.	Fruit-Grower, citron culture.
TABOR, EDGAR FRANCIS . . . . 39 Everett St., Southbridge, Mass.	Mech.	Foreman Printer, The Southbridge Printing Co.
*WILLIAMS, JAMES EMERSON . . .	Agr.	

\* Deceased.



## 1897.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CARMICHAEL, WELCOME SANDS . Shannock.	Sci.	Bookkeeper, Providence Journal Co., Providence
CASE, HERBERT EDWARDS BROWN . Ph. B., Brown University, 1900. Graduate, Hartford Theological Seminary, 1904. 14 Beacon St., Boston, Mass.	Mech.	Assistant, Foreign Department, Amer. Board of Commissioners for Foreign Missions.
GRINNELL, ARCHIE FRANKLIN . R. F. D. No. 1, East Norton, Mass.	Mech.	Farmer.
HANSON, GERTRUDE MAIE . . . Kingston.	Sci.	Teacher.
HOXSIE, BESSIE BAILEY (Mrs. E. F. RUECKERT) . . . 98 Melrose St., Providence.	Sci.	At home.
KENYON, ALBERT PRENTICE . . . 10 West St., Westerly.	Mech.	Bookkeeper, Maxson & Co., Westerly.
KENYON, CHARLES FRANKLIN . . . Shannock.	Mech.	Engineer, White Bros., White Valley, Mass.
LARKIN, JESSIE LOUISE . . . 98 Beach St., Westerly.	Sci.	Genealogist.
*MARSLAND, LOUIS HERBERT . . .	Mech.	
TEFFT, ELIZA ALICE . . . . . 1 Stanton St., Westerly.	Sci.	Teacher, East Greenwich.
THOMAS, IRVING . . . . . Slocums.	Mech.	Designer of Patterns.

## 1898.

ARNOLD, SARAH ESTELLE (Mrs. R. O. BROOKS) . . . . . 975 East 18th St., Brooklyn, N. Y.	Sci.	At home.
BARBER, GEORGE WASHINGTON . . . Glendora, Cal.	Agr.	Rancher.
CARGILL, EDNA MARIA (Mrs. LESTER H. BROWN) . . . 4 Highland Ave., Lonsdale.	Sci.	At home.
CASE, JOHN PETER . . . . . 251 Monadnock Bldg., San Francisco, Cal.	Agr.	Mgr., Western Office, Brown Hoisting Machinery Company.
CLARK, WILLIAM CASE . . . . . Wakefield.	Sci.	General Manager, Narragansett Pier Elec. Light and Power Co.; Mgr., Wickford Light and Water Co.; Div. Supt., Rhode Island Co.
CONGDON, HENRY AUGUSTUS . . . Kingston.	Mech.	Farmer.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
FLAGG, MARTHA REBECCA . . . Abbott Run.	Sci.	At home.
HARLEY, WILLIAM FERGUSON . . 62 Hillside Ave., Providence.	Agr.	Buyer, with Messrs. Callender, McAuslan & Troup, Providence.
TURNER, HARRIETTE FLORENCE (MRS. GEO. M. TUCKER) . . . Graduate, Drexel Institute, 1900. Forest Glen, Md.	Sci.	At home.
WILSON, GRACE ELLEN (MRS. W. F. HARLEY) . . . 62 Hillside Ave., Providence.	Sci.	At home.

## 1899.

BOSWORTH, ALFRED WILLSON . . A. M., Harvard University, 1913, Geneva, N. Y.	Sci.	Associate Chemist, Agr. Experiment Station, Biological Chemist, Boston Floating Hospital.
BROOKS, RALPH ORDWAY . . . 975 East 18th St., Brooklyn, N. Y.	Sci.	Consulting Chemist, Bacteriologist, Microscopist, Food-Inspection Expert, 191 Franklin St., New York City.
GEORGE, LILLIAN MABELLE . . . A. B., Univ. Ill., 1904. Graduate, N. Y. State Library School, 1910. 10 Twenty-fifth St., Corvallis, Ore.	Sci.	Cataloguer, Oregon Agricultural College Library.
HARVEY, MILDRED WAYNE (MRS. WM. H. BLISS) . . . 407 W. 123rd St., New York City.	Sci.	At home.
KENYON, BLYDON ELLERY . . . 632 Wilson Bldg., Dallas, Texas.	Agr.	Consulting Engineer.
KNOWLES, CARROLL . . . . . 77 Chiswick Road, Edgewood.	Mech.	Chief Tool Designer, Brown & Sharpe Mfg. Co.
KNOWLES, HARRY . . . . . Ph. B., Brown University, 1906. 1182 Broad St., Newark, N. J.	Sci.	Reporter, Newark Sunday Call.
LADD, MERRILL AUGUSTUS . . . Jacksonville, Fla.	Mech.	Sales Manager, Florida Electric Co.
MORRISON, CLIFFORD BREWSTER . New Haven, Conn.	Sci.	Assistant Chemist, Conn. State Experiment Station.
OWEN, WILLIAM FRAZIER . . . Schenectady, N. Y.	Mech.	Engineering Department, General Electric Co.
PAYNE, EBENEZER . . . . . M. D., Univ. Michigan, 1904. Glendora, Cal.	Sci.	Orange Grower.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
PHILLIPS, WALTER CLARKE . . . Ph. B., Brown University, 1902. A. M., Brown University, 1903. Providence.	Mech.	Instructor in English, Brown University.
REYNOLDS, ROBERT SPINK . . . Room 314, Gen. Office Bldg., New Haven, Conn.	Mech.	Assistant Engineer, Bridge Dept., N. Y., N. H. & H. R. R. Co.
RICE, MINNIE ELIZABETH (MRS. ROBERT J. SHERMAN) . . . Exeter Hill.	Sci.	At home.
SHERMAN, ABBIE GERTRUDE (MRS. BENJAMIN BARTON) . . . 56 Pavilion Ave., Providence.	Sci.	At home.
*SHERMAN, GEORGE ALBERT . . .	Mech.	
THOMPSON, SALLY RODMAN (MRS. LEWIS BALCH, JR.) . . . Wakefield.	Sci.	At home.

## 1900.

BRIGHTMAN, HENRY MAXSON . . . 50 Church St., New York City.	Mech.	Drying Expert, with B. F. Sturtevant Co.
CROSS, CHARLES CLARK . . . Detroit, Mich.	Mech.	Factory Manager, Saxon Motor Co.
ELDRED, JOHN RALEIGH . . . Kingston.	Mech.	Instructor in Mechanical Engineering, R. I. S. C.
FISON, GERTRUDE SARAH (MRS. JOHN W. ROOT) . . . 21 Oxford St., Malden, Mass.	Sci.	At home.
FRY, JOHN JOSEPH . . . Portchester, N. Y.	Sci.	Principal, Byram School.
GODDARD, EDITH (MRS. LAWRENCE B. REED) . . . 20 North St., Plymouth, Mass.	Sci.	At home.
KENYON, AMOS LANGWORTHY . . . Wood River Junction.	Agr.	Dairyman.
MUNRO, ARTHUR EARLE . . . Ph. B., Brown University, 1902. 41 George St., Providence.	Sci.	Attorney-at-Law, 49 Westminster St.
SOULE, RALPH NELSON . . . 488 Montclair Ave., Detroit, Mich.	Sci.	Asst. Mgr., Service Dept., Chalmers Motor Co.
STEERE, ANTHONY ENOCH . . . Waterloo, N. Y.	Mech.	Resident Civil Engineer, charge Residency No. 3, New York State Barge Canal.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
STILLMAN, LENORA ESTELLE . . 1134a Greene Ave., Brooklyn, N. Y.	Sci.	Teacher.
TUCKER, BERTHA DOUGLASS . . R. F. D. No. 2, Box 105, Swansea, Mass.	Sci.	Dressmaker.
WHEELER, CHARLES NOYES . . 97 Garden St., Pawtucket.	Sci.	Clerk, Wm. H. Haskell Manufacturing Co.
WILSON, JOSEPH ROBERT . . Allenton.	Mech.	Surveyor, Alberta, Canada.

## 1901.

BRAYTON, CHARLES ANDREW . . Hope, R. F. D.	Agr.	Farmer.
BRIGGS, NELLIE ALBERTINE . . Providence.	Sci.	Stenographer, R. I. Hospital Trust Co.
BURGESS, CHARLES STUART . . 264 Sayles St., Providence.	Mech.	Draughtsman, Brown & Sharpe Mfg. Co.
CLARNER, LOUIS GEORGE KARL, JR. Arnold's Mills.	Sci.	Farmer.
DAWLEY, EDNA ETHEL . . . (Mrs. GEORGE W. WHITFORD), West Kingston, R. F. D., Box 80.	Sci.	At home.
DENICO, ARTHUR ALBERTUS . . Ph. B., Brown Univ., 1904. 450 Audubon Ave., New York City.	Sci.	Traffic Engineer with American Telephone and Telegraph Co.
*JAMES, RUTH HORTENSE (Mrs. HERBERT E. ROUSE) . .	Sci.	
SHERMAN, ANNA BROWN . . . 49 Roger Williams Ave., Providence.	Sci.	Publisher.
SHERMAN, ELIZABETH AGNES . . 424 Mass. Ave., Boston, Mass.	Sci.	Secretary to Research Chemist, Arthur D. Little, Inc., Boston.
SMITH, HOWARD DEXTER . . . A. M., Brown University, 1904. Ph. D., Tufts College, 1906. 14 Holden St., Lowell, Mass.	Sci.	Instructor in Chemistry, Lowell Textile School.
STEERE, ROWENA HOXSIE . . . 102 Sassafras St., Providence.	Sci.	Stenographer.
WILBY, JOHN . . . . . Flat River, Missouri.	Sci.	Supply Clerk, Central Lead Co.

## 1902.

CLARKE, LATHAM . . . . . A. M., Brown University, 1903. Ph. D., Harvard University, 1905. Montevideo, Uruguay.	Chem.	Director, Instituto de Quimica Industrial.
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## NAME AND ADDRESS.

## COURSE.

## OCCUPATION.

FERRY, OLIVER NEEDHAM . . . 30 Stuart St., New Britain, Conn.	Mech.	In charge of Production Dept. Maxwell-Briscoe Motor Co.
MAXSON, RALPH NELSON . . . Ph. D., Yale University, 1905. 366 Transylvania Park, Lexington, Ky.	Chem.	Professor Inorganic Chemistry. State University.
PITKIN, ROBERT WILLIAM . . . Rockville, Conn., R. F. D. No. 1.	Mech.	Farmer.

## 1903.

BARBER, KATE GRACE (MRS. A. L. WINTON) . . . Ph. D., Yale University, 1906. 1607 Transportation Bldg., Chicago, Ill.	Gen. Sci.	Investigations in Vegetable Histo- logy.
CONANT, WALTER AIKEN . . . Temple, N. H.	Agr.	Dairying, The Conant and Clem- ent Farms, Hillsboro County.
GODDARD, WARREN, JR. . . . Graduate, New Church Theo- logical School, 1907. 905 Linwood St., La Porte, Indiana.	Mech.	Pastor, New Church.
KEEFER, EDITH CECILIA . . . 63 West 48th St., N. Y. City.	Biol.	Teacher of Mathematics, Miss Spence's School.
KENT, RAYMOND WARREN . . . A. M., Harvard University, 1904. 171 Dodge Ave., Akron, Ohio.	Chem.	Chemist, The Sweinhart Tire and Rubber Co.
TEFFT, ERNEST ALLEN . . . 85 Larch St., Providence.	El. Eng.	Electrical Contractor, 87 West- minster St.

## 1904.

BALLOU, WILLARD ALGER . . . B. S. Columbia Univ., 1913. 335 Lafayette Ave., Brooklyn, N. Y.	Biol.	Instructor in Mathematics, Pratt Institute.
QUINN, MARY LOUISE . . . . 20 N. Smallwood St., Cumberland, Md.	Biol.	Teacher of Science, Allegany Co. High School.
RODMAN, WALTER SHELDON . . . M. S., R. I. C. A. & M. A., 1907. M. S., Mass. Inst. Tech., 1909. 1201 W. Main St., University, Va.	El. Eng.	Associate Professor of Electrical Engineering, University of Virginia.

## 1905.

CHAMPLIN, SARAH ELIZABETH . 63 Carolina Ave., Providence.	Gen. Sci.	Bookkeeper, Burt Mfg. Co., 226 Eddy St.
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NAME AND ADDRESS.	COURSE.	OCCUPATION.
DOW, VICTOR WELLS . . . 6 Tyler St., Hampton, Va.	High. Eng.	Draftsman, Hampton Institute.
GILMAN, JEAN . . . . Hampton, Va.	High. Eng.	Assistant to Director of Trade School, Hampton Institute.
HARRALL, NELLIE ARMSTRONG. (MRS. B. H. ARNOLD) . . . Graduate, Sargent School of Physical Education, 1909. 555 West 10th St., Erie, Pa.	Gen. Sci.	At home.

## 1906.

ARNOLD, BENJAMIN HOWARD . 555 West 10th St., Erie, Pa.	El. Eng.	Supervisor of Tests, Erie Works, General Electric Co.
BERRY, WALLACE NOYES . . Albuquerque, New Mexico.	El. Eng.	With Albuquerque Gas, Electric Light and Power Co.
ELKINS, MARION GRAHAM . . Ph. D., Yale University, 1912. College Park, Virginia.	Gen. Sci.	Instructor in Biology, Randolph- Macon Woman's College.
HARDING, LEE LAPLACE . . 61 Brigham Park, Fitchburg, Mass.	High. Eng.	Instructor in Mathematics, Fitch- burg High School.
KEYES, FREDERICK GEORGE . . Sc. M., Brown Univ., 1907. Ph. D., Brown Univ., 1909. Boston, Mass.	Chem.	Instructor in Theo. Chem. and Re- search Associate in Research Laboratory, Mass. Institute of Technology.
NICHOLS, HOWARD MARTIN . . Hyde Park, Mass.	El. Eng.	Assistant Engineer, B. F. Sturte- vant Co.
SISSON, CORA EDNA . . . M. S., Brown Univ., 1910. 164 Washington St., Kingston, N. Y.	Gen. Sci.	Instructor in Biology, Ulster Academy.
WILKINSON, ALBERT EDMUND . 309 Stewart Ave., Ithaca, N. Y.	Agr.	Extension Instructor in Vegetable Gardening, Cornell University.

## 1907.

BARBER, ARTHUR HOUGHTON East Greenwich.	Mech. Eng.	Inspector for Associated Factory Mutual Fire Insurance Cos., Boston, Mass.
COGGINS, CALVIN LESTER . . 132 West 93rd St., New York City.	El. Eng.	Instructor in Physics, Stevens Institute of Technology, Hoboken, N. J.
FERRY, JAY RUSSELL . . . 677 Rutherford Ave., Trenton, N. J.	High Eng.	Structural Engineer.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
KELLOGG, DAVID RAYMOND . . Ph. D., Ohio State University, 1912. 506 Custom House, San Francisco, Cal.	Chem.	Asst. Physical Chemist, Bureau of Mines.
KENDRICK, WINFIELD SMITH . . 231 Parkwood Boulevard, Schenectady, N. Y.	El. Eng.	Specialist, General Electric Co.
LAMOND, JOHN KENYON . . M. A., Yale Univ., 1908. Ph. D., Yale Univ., 1910. 38 Brainerd Ave., Middletown, Conn.	El. Eng.	Instructor in Mathematics, Wes- leyan University.
LEWIS, HARRY REYNOLDS . . . 17 Jones Ave., New Brunswick, N. J.	Agr.	Professor, Dairying and Poultry Husbandry, Rutgers College.
MACOMBER, MINER SANFORD . . Berlin, Wisconsin.	Chem.	Chemist, with Pacific Coast Con- densed Milk Co.
TUCKER, ETHEL ALDRICH (MRS. LITILETON C. HAYDEN) Feldman Bldg., Pittsfield, Mass.	Gen. Sci.	At home.

## 1908.

DREW, JOSEPH DRAKE . . . 2010 Avenue H, Ensley, Alabama.	Chem.	Chemist, Tenn. Coal, Iron & R. R Co.
FIELD, CLESSON HERBERT . . C. E., Lehigh Univ., 1909. 223 Loring Ave., Buffalo, N. Y.	Civ. Eng.	Asst. Structural Engineer, Lacka- wanna Steel Co.
FISKE, HERBERT ANDREW . . 49 Sycamore St., New Bedford, Mass.	El. Eng.	Automobile Instructor.
GARDINER, ROBERT FRANKLIN . . 1223 Irving St., Washington, D. C.	Chem.	Asst. Chemist, Bureau of Soils, U. S. Dept. of Agriculture.
GORY, EDWARD ALLEN . . . 17 Eldora St., Roxbury, Mass.	El. Eng.	Electrical Repair Work.
KENYON, SUSAN ELNORA (MRS. FRED K. CRANDALL) . . Westerly.	Biol.	At home.
MITCHELL, CLOVIS WILLIAM . . 36 Franklin St., New London, Conn.	Civ. Eng.	Teacher, Mathematics and Sci- ence, Manual Training High School.
ROSE, ORPHA LILLIE (MRS. HENRY A. CONGDON) Kingston.	Gen. Sci.	At home.
SHELDON, GEORGE WARE . . 58 James St., Newark, N. J.	El. Eng.	With Westinghouse Electric Mfg. Co.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
SHERMAN, MARY ALBRO . . . West Kingston.	Agr.	Teacher, Curtis Corner.
SMITH, JOHN LEBROC . . . 148 Magnolia St., Auburn.	El. Eng.	Head of Science Dept., Cranston High School.
WHIPPLE, LUCIUS ALBERT . . . Pawtucket.	Civ. Eng.	Superintendent of Schools, Town of Lincoln.

## 1909.

CARGILL, RHOBIE LUCELIA . . . 183 Pearl St., Providence.	Appl. Sci.	Teacher of Mathematics, Technical High School.
CRAIG, JAMES MCINTYRE . . . Arsenida de Mayo, 605 Buenos Aires, Argentine.	Agr.	Gardener.
CRANDALL, FRED KENYON . . . Westerly.	Agr.	Farmer.
FRENCH, HENRY FRANK . . . 9 Anoka Place, Lynn, Mass.	El. Eng.	Turbo-Generator Engineer, General Electric Co.
HOWE, ALBERT MENDEL . . . 1 Millet St. Campello, Mass.	El. Eng.	Assistant General Foreman, Repair Dept., Bay State St. Ry. Co.
KNOWLES, WALTER . . . Kingston.	Civ. Eng.	Construction Dept., N. Y., N. H. & H. Railroad.
LEE, ALFRED ROGERS . . . 2419 N. Capitol St. Washington, D. C.	Agr.	Junior Animal Husbandman, in Poultry Investigations, Bureau of Animal Industry, U. S. Dept. of Agriculture.
MORAN, WALTER JOHN . . . 299 West Main St., Waterbury, Conn.	Civ. Eng.	Civil Engineer, N. Y., N. H. & H. R. R. Co.
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